

IELTS

Academic Test



Contains 1 complete test with answers and explanations

Audio for listening can be found at: <https://youtu.be/opbboYQCQ4>

Audio for speaking can be found at: <https://youtu.be/P9vEKamnOAg>

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Listening Test

Part One Questions 1 – 10

Questions 1 – 10

Complete the notes below.

Write **NO MORE THAN ONE WORD AND/OR A NUMBER** for each answer.

 Phillips Clinic Creating beautiful smiles	Enquiry - Braces
<u>Type</u> Wire <input type="checkbox"/> Invisible <input checked="" type="checkbox"/>	
<u>Issue</u> Details of problem: (1) _____	
<u>General information for client</u> <ul style="list-style-type: none"> • Retainer, not braces • Can be (2) _____ for eating and cleaning teeth • Need to be worn for at least (3) _____ a day • Patient wears a series of differently aligned retainers that slowly move the teeth into position • Same number of visits as for braces because given (4) _____ of retainers at each visit. • Invisible because very thin, less than (5) _____ thick and moulded to fit the teeth perfectly. • First appointment (6) _____ is taken of teeth and sent to lab. Lab makes retainers. • Follow up visits (7) _____ 	
<u>Client Details</u> Name: (8) _____ Address: 62 Hackett Place Doncaster Phone: (9) _____ Email: judith62@yahoo.com	
<u>Appointment</u> Yes / No If No, why: N/A If Yes, time and date: (10) _____ Tuesday 15th	

Part Two Questions 11 – 20

Questions 11 – 16

Choose the correct letter, **A**, **B** or **C**.

Volunteering and your Career

11 Windsor Castle

- A** was built by William I
- B** is known for its building style
- C** is the home of the royals

12 Originally Windsor was

- A** built for military purposes
- B** quite small
- C** on a central hill

13 In the 13th Century

- A** It was destroyed in the Baron's War
- B** The three wards were finished
- C** A luxury palace was built by Henry III

14 After the civil war

- A** Charles I was a prisoner in the castle
- B** Charles II rebuilt much of the castle
- C** George III and George IV renovated the castle

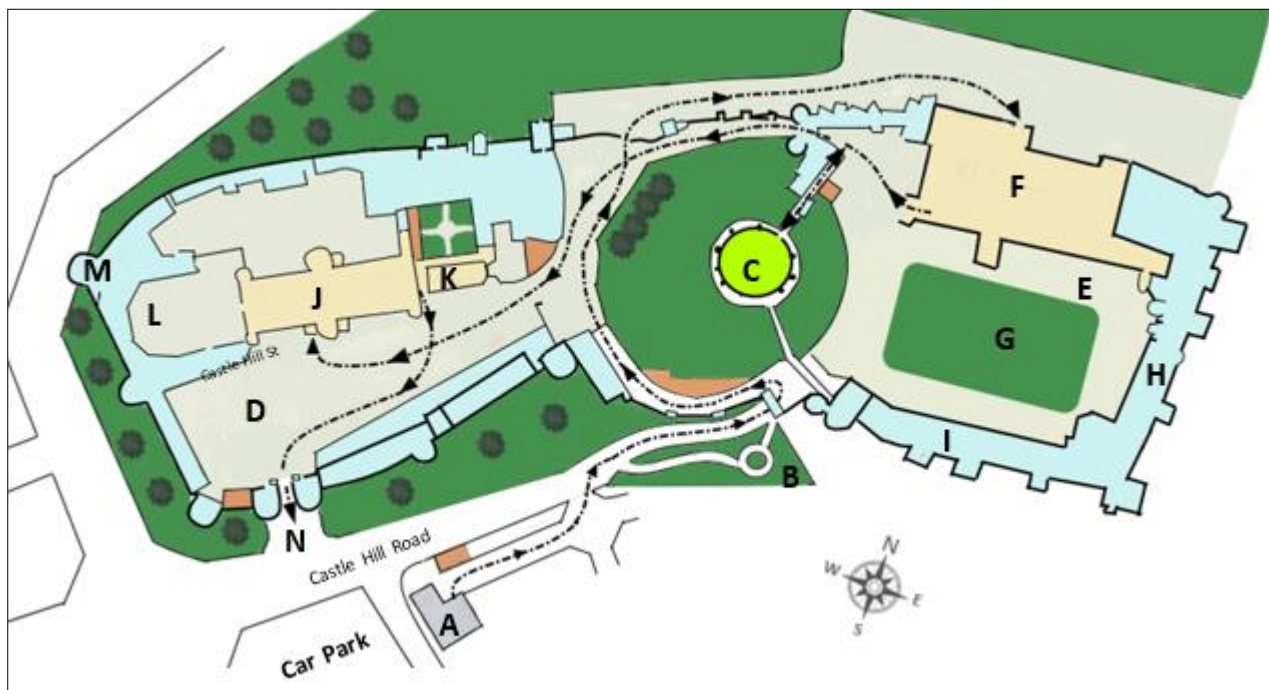
15 Last century

- A** The castle survived a fire
- B** The castle was a refuge in the first world war
- C** The castle was a centre of royal entertainment

Questions 16 – 20

Label the plan below

Write the correct letter, **A – N** next to Questions 16 – 20



- | | |
|--------------------------------------|-------|
| 16. Jubilee Gardens | |
| 17. Lower Ward | |
| 18. The Quadrangle | |
| 19. The Lady Chapel | |
| 20. King Henry VIII's Gateway | |

Part Three Questions 21 - 30

Questions 21 – 24

Choose the correct letter, **A**, **B** or **C**.

Volunteering and your Career

21 For the introduction Shane and Jane

- A** are using a simple graphic
- B** are including definitions
- C** will use a simple opening slide

22 The presentation will be organised by

- A** explorers
- B** eras
- C** eras and explorers

23 The students will not mention

- A** Zheng He
- B** Magellan
- C** De Galla

24 The age of discovery was

- A** up to the 18th century
- B** The 1500's
- C** The 15th to 17th centuries

Questions 25 – 30

Label the plan below

What do the students still need to do for each section of their presentation?

Choose **SIX** answers from the box and write the correct answer, **A – H**, next to Questions 25 – 30.

Actions	
A	Find modern map
B	Add timeline
C	Use voiceover
D	organise information
E	verify sources
F	check timing
G	Add definitions
H	Decide on slide styles

25. Introduction

26. Ancient

27. Medieval

28. Age of Discovery

29. Modern

30. Conclusion

Part Four Questions 31 - 40

Questions 31 - 40

Complete the notes below

Write NO MORE THAN THREE WORDS AND/OR A NUMBER for each answer.

MIT Opencourseware 6.00 Introduction to Computer Science and Programming

Lecturers

Eric Grimson and John Guttag

The head of department is (31) and has been lecturing for
(32) years. This course is to be approached seriously by all
participants.

Introduction

This lecture will deal with administration and the (33) of the course and
the concepts and (34) of computational thinking.

Goals

Students with little (35) will be able to cope with the course
as it is designed for students who do not plan to major in computer science but want
to be able to (36) a small amount of code.

The aim for all participants is to learn the limits of computation in solving technical
problems and to give you the skills to obtain jobs. These are the
(37)

Pre-requisites for the course

No student at MIT could be classed as unready for the course, however we discourage
(38) students from undertaking this study. This is because it is not
the best course for knowledgeable students and we don't want you to
(39) the other students. If you think this describes you, please see
(40) after the lecture.

Reading Test

Reading Passage 1

You should spend about 20 minutes on **Questions 1 – 13**, which are based on Reading Passage 1 below.

Nikola Tesla

The man who invented the 20th century

Nikola Tesla was of unusual intellectual brilliance. The Serbian-American inventor, physicist, mechanical engineer and electrical engineer could reason, plan, and solve problems in his head. He could think abstractly and comprehend ideas without putting pen to paper. His patents (over 225 in the United States) and theoretical work still form the basis for modern alternating current electric power systems (including the polyphase system power distribution system). Tesla helped usher in the Second Industrial Revolution and is regarded as one of the most important inventors in history.

Tesla was born "at the stroke of midnight" in 1856 during a lightning strike in a summer storm (the first moment of July 10). The midwife commented, "He'll be a child of the storm," to which his mother replied, "No, of light." He was born in Smiljan near Gospić in Croatia, Lika. His Baptism Certificate reports that he was born on June 28 (Julian calendar; July 10 in the Gregorian calendar) 1856, and christened by the Serbian orthodox priest, Toma Oklobdžija. Tesla was baptised in the Old Slavonic Church rite.

His father was Rev. Milutin Tesla, a Serbian priest in the Orthodox Metropolitanate of Karlovci which gathered the Serbs of the "Greek-rite" as they were legally referred to in Habsburg Monarchy at the time. His father's church in Gospić was destroyed in the 1990s. His mother was Đuka Mandić, a housewife talented at inventing useful household tools. Although very smart and with an excellent memory, she had to take care of her siblings when her mother, Sofia Budisavljevic, died. Nikola Tesla's mother was a great influence on him. Nikola was one of five children, having one brother and three sisters. His godfather, Jovan Drenovac, was a Captain in the Krajina army. His family moved to Gospić in 1862.

Tesla went to school in Karlovac. After he graduated from a prestigious High School, he went back to Gospić during the summer to see his family and almost died of cholera. He asked his father if he could study engineering if by miracle he survived, and the father promised his dying son to send him to the best school in the whole world. Nikola's health improved quickly, and his father sent him to study at the Austria Politechnic in Graz, Austria, in 1875.

In 1881 he moved to Budapest to work for the telegraph company, American Telephone Company. On the opening of the telephone exchange in Budapest, 1881, Tesla became the chief electrician to the company. He also developed a telephone repeater (sometimes called an amplifier). The device could act as an audio speaker. The invention was never patented nor released publicly (till years later by Tesla himself). The device also contained the characteristics of modern wireless telephones. In 1882 he

moved to Paris to work as an engineer for the Continental Edison Company. He worked designing improvements to electric equipment. In the same year, Tesla conceived of the induction motor and began developing various devices that use rotating magnetic fields (for which he received patents in 1888). Tesla visualized the rotating fields and thereby designed the induction motor.

Later in 1882, Tesla hastened from Paris to his mother's side as she lay dying, arriving hours before her death in 1882. Her last words to him were, "You've arrived, Nidzo, my pride." After her death, Tesla fell ill. He spent two to three weeks recuperating in Gospić and the village of Tomingaj near Grač, the birthplace of his mother. All his life, Tesla kept a home-spun embroidered travel bag from his mother.

In 1884, Tesla moved to the United States of America to accept a job with the Edison Company in New York City. He arrived in the US with 4 cents to his name, a book of poetry, and a letter of recommendation from Charles Batchelor (his manager in his previous job) to Thomas Edison. The letter read simply "I know two great men, and you are one of them. This young man is the other". Tesla's work for Edison began with simple electrical engineering. Eventually Tesla earned the respect of Edison and offered to undertake a complete re-design of the Edison company's DC dynamos. After Tesla described the nature of the benefits from his proposed modifications, Edison offered him US\$50,000 if they were successfully completed. Tesla worked for nearly a year to redesign them and gave the Edison company several enormously profitable new patents in the process. However, Edison then reneged on his offer of \$50,000 only giving Tesla a \$10 per week raise instead. Tesla resigned on the spot and never received any remuneration for all his hard work.

Westinghouse also hired Tesla for one year to help develop a power system using alternating current. The advantage that popularized alternating current is the use of transformers for long distance electric power transmission. Tesla is also known for his high-voltage, high-frequency power experiments in New York and Colorado Springs, Colorado which included inventions and ideas used in the invention of radio communication, for his X-ray experiments, and for his unsuccessful attempt at worldwide wireless transmission in his unfinished Wardenclyffe Tower project.

Tesla's achievements made him extremely famous. So did his abilities as a showman, demonstrating his seemingly miraculous inventions. Although he made a great deal of money from his patents, he spent a lot on his experiments. He lived for most of his life in a series of hotels in New York City. The end of his patent income and eventual bankruptcy led him to live in much poorer circumstances. Tesla still continued to invite the press to parties, he held on his birthday to announce new inventions he was working and make (sometimes unusual) statements. Because of his wonderful pronouncements without results or proof, Tesla gained a reputation in popular culture as the archetypal "mad scientist". Tesla's vision was to find a means to provide humanity the means for unlimited energy. He gave his life to make real these plans, while others made fortunes with his inventions. He died in room 3327 of the New Yorker Hotel on 7 January 1943.

Tesla's legacy can be seen across modern civilization wherever electricity is used. Aside from his work on electromagnetism and engineering, Tesla is said to have contributed in varying degrees to the fields of robotics, ballistics, computer science, nuclear physics, and theoretical physics. Many contemporary admirers of Tesla have deemed him the man who invented the twentieth century.

Sourced from: https://en.wikibooks.org/wiki/Nikola_Tesla/Print_version and https://simple.wikipedia.org/wiki/Nikola_Tesla

Questions 1-8

Do the following statements agree with the information given in Reading Passage 1?

In boxes 1-8 on your answer sheet, write

TRUE *if the statement agrees with the information*

FALSE *if the statement contradicts the information*

NOT GIVEN *if there is no information on this*

- 1** In Tesla's family, the oldest son was expected to enter the priesthood.
- 2** Tesla was very religious.
- 3** Charles Batchelor was impressed by Tesla.
- 4** Edison ratified his \$50,000 deal with Tesla.
- 5** Tesla championed the use of alternating current.
- 6** Tesla was extremely wealthy.
- 7** At Wardencliff Tower Tesla achieved worldwide wireless transmission.
- 8** Tesla died in penury.

Questions 9 – 13

Complete the notes below.

Choose **ONE WORD ONLY** from the passage for each answer.

Write your answers in boxes 9-13 on your answer sheet.

Nikola Tesla

Early life

- was born in Croatia in 1856 - father was a **9**
- trained as an engineer, moved to Budapest in 1881

Early career

- worked for American Telephone Company 1881
- Became chief electrician of the company
- developed the telephone repeater or **10**
- at the time the invention was not **11**

Later career

- worked for Edison from 1884
- Spent one year working for **12** and developing an alternating current power system.
- Attempted wireless power transmission at Wardencliff Tower Project
- Gained reputation as a 'Mad Scientist' due to his habit of making astounding assertions without **13** or evidence.

Reading Passage 2

You should spend about 20 minutes on **Questions 14 – 26**, which are based on Reading Passage 2 below.

Questions 14 – 18

Reading Passage 2 below has nine sections, **A – I**

Which section contains the following information?

Write the correct letter, **A – I**, in boxes 14 – 18 on your answer sheet.

- 14. Your predisposition to happiness is partly innate
- 15. There are generally agreed upon factors that contribute to happiness
- 16. The avoidance of unpleasantness does not lead to long-term happiness
- 17. Overthinking does not lead to happiness
- 18. Troubles are important for a meaningful life

The Science of Happiness

A

Although happiness can feel like an amorphous concept, science has explored key pieces of the experience, such as which choices, activities, and mindsets lead to fulfillment, common misunderstandings of happiness, and theories that may explain the origin and attainment of well-being. Finding satisfaction and contentment is a continual process. Psychologists have now identified many of the tenets that help individuals along that journey.

B

Happiness incorporates curiosity, and the ability to tolerate risk and anxiety to discover new passions and facets of identity. It involves a balance between momentary pleasure and longer-term striving toward goals. It is abetted by friends and family who can both celebrate accomplishments and provide support after failures. Happiness includes the ability to acknowledge and embrace every emotion, even the unpleasant ones. It involves seeing the big picture, rather than getting stuck in the details. Overall, being happy is to live with mindfulness, meaning, and purpose.

The key to lifelong happiness is taking time to cultivate small tweaks on a regular basis. Incorporating habits into your daily life such as keeping a gratitude journal, practicing kindness, nurturing optimism, learning to forgive, investing in relationships, finding flow activities, avoiding overthinking, savoring life's joys, and committing to goals can make happiness a permanent fixture.

C

Some people are naturally more optimistic, positive, and content. Although genetics is, in fact, a key determinant of happiness, people who gravitate toward pessimism are able to change their outlook (to an extent) by reframing negative thoughts and preventing self-criticism. Our genes may be what influences happiness the most. Behavioral geneticists and psychologists attribute about 50 percent of happiness to genetics, 10 percent to life circumstances, and 40 percent to personal choices. Even if people aren't born with a bright outlook, committing to improving their happiness on a regular basis can make a difference.

D

People often want to avoid difficult emotions, so they reach for quick fixes like tasty treats or luxurious purchases. Those indulgences provide happiness, but only momentarily. Yet pinning all hopes of happiness on milestones like getting married, gaining fame, or becoming wealthy is also misleading. Lasting happiness occurs when we invest in meaningful goals, relationships, and values and develop skills to overcome distress.

E

People often believe that accomplishments like marriage and wealth will bring lasting happiness, and adverse experiences such as divorce or disease will bring unremitting sadness. But research reveals that bursts of happiness or sadness tied to specific life events are fairly short. Thoughts like “I’ll be happy when I get married” or “I’ll never recover from this diagnosis” turn out to be misperceptions and a meaningful life encompasses disappointments and loss. Difficult experiences can reveal our core values, motivate us to make change, and render happy moments even more joyous and special.

F

Also, people are surprisingly bad at anticipating their future happiness. They tend to overestimate how joyous or upsetting events will be: A promotion will not provide unending fulfillment and a breakup will not be hopelessly tragic. People also recall experiences by the beginning, end, and intense or “peak” moments, rather than by the experience as a whole.

G

Money is also no guarantee of happiness. Many lottery winners wind up no happier than their peers down the road—and some face a distinct downturn, squandering their wealth, dealing with litigation, or navigating life with people who demand a share of the winnings. Yet research suggests that when lottery winners spend their money on basic necessities or moderate consumption, they feel more secure, fortunate, and happy.

H

Positive psychology is a school of thought devoted to understanding what leads people and communities to flourish. Five agreed-upon factors boost well-being: positive emotion, engagement, relationships, meaning, and accomplishment. Beyond those overarching principles, specific models and concepts have emerged as well.

I

Every individual is born with a particular “happiness set point” or a baseline level of happiness, research suggests. After experiencing triumphs or tragedies, people adapt to their new circumstances and their emotions generally return to this genetically-determined level of well-being. However, commitment to compassion and altruism may help reset your happiness set point, as the trait most connected to long-term increases in life satisfaction. Helping others leads a person to be happier—perhaps due to higher self-esteem, a sense of self-worth, or a deeper sense of purpose, feeling that lives are important. Science has come a long way in determining what happiness is and how to achieve it, but there is still a long road to go. The only thing that everyone seems to agree on is that to acquire happiness, one must choose to be happy.

adapted from : <https://www.psychologytoday.com/intl/basics/happiness/the-science-happiness>

Questions 19 – 26

Complete the summary below.

Choose **NO MORE THAN TWO WORDS** from the passage for each answer.

Write your answer in boxes 19-26 on your answer sheet.

What is Happiness?

The many **(19)**_____ that contribute to happiness have been identified. Being curious, learning new things, being aware of but not succumbing to risk and anxiety. It is having a balance in your life, enjoying a **(20)**_____ but also striving towards your goals. Friends and family are important in that they share in **(21)**_____ and support you in your failures. Avoiding unpleasantness will not lead to happiness, instead live a mindful, meaningful life of purpose.

The key is to continually acknowledge where you need to change and make **(22)**_____ regularly. Start a journal, nurture optimism, don't overthink and appreciate **(23)**_____. Choose to be happy.

This is easier for those who are naturally more optimistic. Scientists **(24)**_____ half our happiness to **(25)**_____, only a tenth from life circumstances and the rest because of personal choices. This means that even if you do not have a **(26)**_____ you can still choose to be happy and make choices to support this.

Reading Passage 3

You should spend about 20 minutes on **Questions 27 – 40**, which are based on Reading Passage 3 below.

Will we ever have self-driving cars?

Any avid reader of science fiction knows about automated vehicles but when will we actually have them on our roads?

What are Self-driving vehicles

Vehicles are increasingly equipped with automatic features, such as automatic parking, adaptive cruise control and stop-and-go control systems and these automatic features are rapidly developing further. However, a fully automatic vehicle is one that can drive without the need for any human intervention at all, and this unfortunately we do not have.

Levels of driving automation

In SAE's automation level definitions, "driving mode" means "a type of driving scenario with characteristic dynamic driving task requirements (e.g., expressway merging, high speed cruising, low speed traffic jam, closed-campus operations, etc.) (1)

- Level 0: The automated system issues warnings and may momentarily intervene but has no sustained vehicle control.
- Level 1 ("hands on"): The driver and the automated system share control of the vehicle. Examples are systems like cruise control and parking assistance. However, the driver must be ready to retake full control at any time.
- Level 2 ("hands off"): The automated system takes full control of the vehicle: accelerating, braking, and steering. The driver must monitor the driving and be prepared to intervene immediately at any time if the automated system fails to respond properly.
- Level 3 ("eyes off"): The driver can safely turn their attention away from the driving tasks, e.g. the driver can text or watch a movie. The vehicle will handle situations that call for an immediate response, like emergency braking. You can think of the automated system as a co-driver that will alert you in an orderly fashion when it is your turn to drive.
- Level 4 ("mind off"): As level 3, but no driver attention is ever required for safety, e.g. the driver may safely go to sleep or leave the driver's seat. However, Self-driving is supported only in limited spatial areas (geofenced) or under special circumstances. Outside of these areas or circumstances, the vehicle must be able to safely abort the trip, e.g. slow down and park the car, if the driver does not retake control. An example would be a robotic taxi or a robotic delivery service that only covers selected locations in a specific area, at a specific service time.
- Level 5 ("steering wheel optional"): No human intervention is required at all. An example would be a vehicle which can do a full trip from the starting point to the destination. Another example would be a robotic vehicle that works on all kinds of surfaces, all over the world, all year around, in all weather conditions.

Why is it taking so long to develop?

The basic idea is that the cars are equipped with cameras and sensors that will 'map' their surroundings and enable the car to drive safely. However, this simple explanation obscures the mind-boggling complexity of the task. As Kelsey Piper of Vox says: "Following a list of rules of the road isn't enough to drive as well as a human does, because we do things like make eye contact with others to confirm who

has the right of way, react to weather conditions, and otherwise make judgment calls that are difficult to encode in hard-and-fast rules (2).”

Although there have been major strides made in AI technology, almost all of these depend upon ‘machine learning’, that is giving the AI enough exposure to the situation that they can learn all the possible outcomes and so choose accordingly. To do this for self-driving cars would take millions of road hours and uncountable situations, and even then, the AI would only be able to respond to a previously encountered situation, and in real life, new things happen all the time. Therefore, the reality seems to be that fully automated vehicles are still some way off.

Benefits of self-driving vehicles

Self-driving cars and lorries have significant benefits. Ninety percent of traffic accidents can be attributed to human error. This means that self-driving vehicles have a significant potential to reduce the risk of road accidents. Self-driving and ITS have potential to reduce emissions and improve efficiency. Platooning for instance, which allows trucks to follow one another more closely, reduces the effect of air resistance. This can lead to a 5%-15% reduction in fuel consumption, with a comparable reduction in CO₂ emissions. Communication between vehicles can have a positive impact on traffic flows. For example, coordination with respect to braking and accelerating will result in fewer unnecessary tailbacks (3).

Self-driving cars will also make life easier for people with mobility issues like the disabled, and those who do not drive or can no longer drive such as the elderly. They may be cheaper than owning a car as there is no longer a need to pay for petrol, insurance and the cost of the vehicle. Imagine a fleet of autonomous Ubers, for example. Transportation that you don’t have to maintain but is conveniently available for you when you need it.

So why are we preserving?

Whoever does make the first driverless car is probably going to make a lot of money. For these reasons, governments and tech companies are persevering in their search for a truly autonomous vehicle. The Netherlands are one example. The Netherlands firmly believes in the potential benefits for significant change in road mobility with the introduction of cooperative Intelligent Transport Systems (ITS) systems. Innovations in this field should allow them to improve traffic flows on their roads in terms of safety, efficiency and environmental impact, and can be an important boost to Europe’s competitive strength, jobs opportunities and growth. By establishing the Netherlands as a country for testing automated cars and ITS systems, the minister wants to make the Netherlands a fertile breeding ground for this kind of innovation and facilitate these developments (3).

The Future of Self-Driving Cars

For now the future of automated vehicles will probably be similar to what we currently enjoy. Our cars will continue to get smarter and employ more automation to do with parking, choosing routes, alerting us to speed limits and so on but it will be many years yet before truly automatic vehicles appear simply because of the hours needed to train the AI’s involved.

Self-driving cars are on the horizon, it’s just that the horizon, like always, is a long way away.

References

1. **wikipedia.** Self-Driving Car. *wikipedia*. [Online] 3 November 2020. [Cited: 3 November 2020.] https://en.wikipedia.org/wiki/Self-driving_car#Classification.

2. **Piper, Kelsey.** It's 2020. Where are our self-driving cars? *Vox*. [Online] 28 February 2020. <https://www.vox.com/future-perfect/2020/2/14/21063487/self-driving-cars-autonomous-vehicles-waymo-cruise-uber>.

3. **government of the Netherlands.** Self-Driving Vehicles. [Online] 3 November 2020. <https://www.government.nl/topics/mobility-public-transport-and-road-safety/self-driving-vehicles>.

Questions 27 – 31

Complete each sentence with the correct ending, **A – F**, below.

Write the correct letter in the space beside each question.

- 27. While cars have become more complex,
- 28. At level 2 the car does most things,
- 29. Driving automation level five means
- 30. Abiding by lists of rules
- 31. With self-driving cars

- A.** that there is no human interference with the AI's driving.
- B.** is important so AI's can drive as well as us.
- C.** we will no longer need to own a car.
- D.** we still do not have fully autonomous vehicles.
- E.** does not enable an AI to drive like a human.
- F.** but we still need to pay attention to the driving.

Questions 32 – 36

Choose the correct letter A, B, C, or D.

Write the correct letter in the space next to the question.

32. Steering optional refers to

- A. when the driver must monitor the driving
- B. when the car is a co-drover
- C. when there is no human intervention
- D. when the driver can read a newspaper

33. The benefits of self-driving cars include

- A. reduce the cost of petrol
- B. reduce the cost of insurance
- C. reduce the number of road accidents
- D. reduce positive impact on traffic flows

34. We currently

- A. have cars that can automatically park
- B. have cars that can control their speed
- C. have cars that will automatically brake, then go
- D. all of the above

35. AI's cannot

- A. catch another driver's eye to indicate right of way
- B. follow a list of rules
- C. map their surroundings
- D. learn from exposure to different situations

36. A car at driving automation level 4

- A. drive on any road
- B. can safely abort the trip
- C. is not limited to specific areas
- D. can deliver to any location

Questions 37 – 40

complete the summary below.

*Choose **NO MORE THAN TWO WORDS** from the passage for each answer*

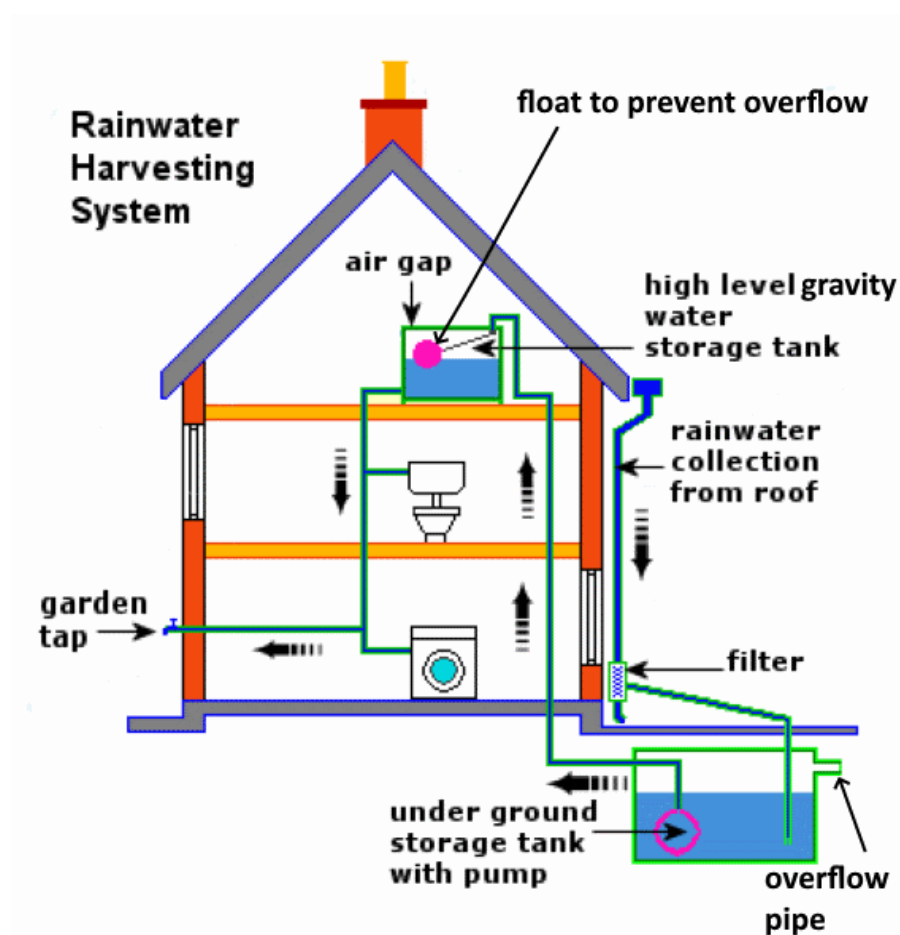
Levels of driving automation

Level zero means that the driver is fully in control of the vehicle whereas level one means that some functions are automated, like **37.** but the human is mostly in charge of driving. Level two is when the car is fully automated, but the driver must **38.** and be ready to take control if needed, while in level three the car is akin to a co-driver and the human's attention can wander. By level four the driver need not even be in the **39.** while the car is within a designated self-driving zone but must take over outside of this. Finally, there is level five, which is truly autonomous with no **40.** required at all.

Writing Test

Task 1

The diagram below shows how rainwater is collected to be used for all household uses except drinking and cooking.



Summarise the information by selecting and reporting the main features and make comparisons where relevant.

Write at least 150 words.

[illegible]

Task 2

You should spend about 40 minutes on this task.

Write about the following topic:

Many people say that it is more advantageous to have virtual meetings, whereas other people say online communication is not as effective as everyone being in the same room together.

Discuss and give your opinion

Give reasons for your answer and include any relevant examples from your own knowledge or experience.

Write at least 250 words.

[illegible]

Speaking Test

How to do the test. Set up your recording device, read each question, and answer the question. For Part 2 take one minute to write notes, then start speaking.

Speaking Part 1

Hometown

- Do you like your hometown? Why?
- How long have you been living in your hometown?
- What is special about your hometown?
- What did you like about your hometown when you were a child?
- Is there anything you don't like about your hometown?

Speaking Part 2

Take one minute to write some notes about the topic below, then talk for one to two minutes:

Describe a job that you would not like to do in the future.

You should say:

- What it is
- Where you know it from
- Is it difficult or easy

And explain why you would not like to do it.

I'd like to ask you a question based on your talk:

- Do you think that many people are doing jobs they don't like?

Speaking Part 3

We have been talking about a job you don't like. Now I'd like to ask you some questions about careers in general.

- What do you believe is important to consider when choosing a career?
- Which do you prefer, physical work or mental work?
- When young people choose their jobs, which is more important, salary or interest?
- Do you think it's common to move to other cities because of jobs?
- Do you think that technology has improved our working lives?
- How will technology impact future jobs?

Answers with explanations

Listening Answers and Transcripts

- | | | | |
|------------------------------------|-------|-------|----------------------------------|
| 1. crowded teeth | 11. B | 21. B | 31. Eric Grimson |
| 2. taken out / removed | 12. A | 22. C | 32. 25 |
| 3. 20 hours | 13. C | 23. A | 33. goal |
| 4. 3 sets | 14. B | 24. C | 34. tools |
| 5. 1 millimetre/1 mm | 15. A | 25. G | 35. prior programming experience |
| 6. scan / photo | 16. B | 26. A | 36. write and read |
| 7. every month | 17. D | 27. E | 37. strategic goals |
| 8. Judith Houlihan | 18. G | 28. D | 38. overqualified |
| 9. 04134289667 | 19. K | 29. B | 39. intimidate |
| 10. 3.15 pm / 3.15 / three fifteen | 20. N | 30. H | 40. John or I |

Part 1

Receptionist	Good Morning, Doctor Phillip's dental surgery. How may I help you.
Woman	Good Morning, I was wondering if your clinic does those invisible braces? My parents couldn't afford to get my teeth straightened when I was a child and I'd really like to do it now. They are not badly crowded¹ , but it does bother me.
Receptionist	Yes, we do and your issue sounds like one that invisible braces could fix. Do you know much about them?
Woman	Not really, I guess what is most important to me is the cost. Are they very expensive?
Receptionist	No, they cost the same as regular braces, and you pay for them monthly, not up front so that does make it easier. Also, if you have health insurance with dental cover you may be able to claim back some of the cost of the braces, up to 50% in some cases.
Woman	That sounds good, I have dental so I'll hopefully I can get some of the money back. Does it take a long time?
Receptionist	Well that depends on the severity of the issue but in general it takes the same time as regular braces, sometimes it can be faster. That is of course, assuming you wear the retainer as you're supposed to.
Woman	Retainer? So, they're not braces?
Receptionist	No, they're clear retainers, like a very, very thin mouthguard but they don't cover your gums at all. You have to take them out to eat and clean your teeth² . We find our patients prefer them because they don't interfere with eating or cleaning your teeth. You can still eat whatever you like, and don't need special equipment to clean your teeth.
Woman	That does sound better than braces!
Receptionist	Yes, it really is. BUT you do need to wear them for at least 20 hours a day³ , or else they just won't work.
Woman	But if it's a retainer how does it move the teeth?

Receptionist	Well, the system uses a series of retainers, all aligned slightly differently to move the teeth a little bit at a time.
Woman	Does that mean I will need to have a lot of visits to the dentist?
Receptionist	No, you have the same number of visits as for braces. The dentist will give you 3 sets of retainers and a schedule for changing them ⁴ so that you don't have to visit for every change of retainer.
Woman	And how can it be invisible, I mean mouthguards are so obvious and uncomfortable!
Receptionist	We say mouthguard because it is something you are familiar with, but the retainers are less than a millimetre thick ⁵ , and modelled to exactly sit on your teeth. They really are very hard to see once you are wearing them, and after a few days you won't even notice you've got them on.
Woman	Oh, I see. So how do I go about it?
Receptionist	Well first of all you'll need to come in for an appointment and have a picture, a scan really ⁶ , of your teeth done. Then we send that off to the lab and they make the first set of retainers. That takes about a week. Then you'll have your first fitting appointment, learn how to take care of the retainers and be given your first set of 3 retainers. You'll have follow up appointments every month ⁷ after that where the dentist will check that everything is going to schedule and give you new set of retainers. Would you like to make an appointment now?
Woman	Yes, I think I would. They do sound much better than regular braces, and if the cost is the same then I'd like to do it.
Receptionist	Okay, first of all can I have your full name?
Woman	It's Judith Houlihan.
Receptionist	Could you please spell your surname?
Woman	Oh sure, H O U L I H A N ⁸
Receptionist	Thanks, and you address, phone number and email please.
Woman	My address is 62, Hackett Place, Doncaster. I'll give you my mobile phone number, it's 04134289667. ⁹ And my email is judith62@yahoo.com
Receptionist	Thank you. Now, I'm afraid we only have one appointment free this week, Thursday at 10.30am, but there are more slots available the week after.
Woman	Oh, I'm afraid I couldn't do Thursday this week. Do you have anything on a Tuesday after 2 pm?
Receptionist	Let's see. Yes, Tuesday the 15 th I have a free slot at 3.15pm ¹⁰ . Would that suit you?
Woman	Yes, that'd be great.
Receptionist	Okay then. Do you have any other questions?
Woman	No, I think that's it.
Receptionist	If you think of anything, write it down so you remember to ask the dentist at your appointment.
Woman	Oh, that's a good idea. Thanks, I will.
Receptionist	You're welcome and I'll see you Tuesday.
Woman	Yes, thanks again. Bye
Receptionist	Goodbye.
	(adapted from: https://youtu.be/q_61-bdtXLQ)

Part 2

We will be arriving at Windsor in a few minutes but before we begin the tour, I'm going to give you a quick overview.

Windsor Castle is a royal residence that is notable for its long association with the English and later British royal family and for its architecture¹¹.

Originally designed to protect Norman dominance around the outskirts of London and oversee a strategically important part of the River Thames¹², Windsor Castle was built as a motte-and-bailey, with three wards surrounding a central mound. Gradually replaced with stone fortifications, the castle withstood a prolonged siege during the First Barons' War at the start of the 13th century. Henry III built a luxurious royal palace within the castle during the middle of the century¹³, and Edward III went further, rebuilding the palace to make an even grander set of buildings in what would become known as the most expensive secular building project of the entire Middle Ages in England. Edward's core design lasted through the Tudor period, during which Henry VIII and Elizabeth I made increasing use of the castle as a royal court and centre for diplomatic entertainment.

Windsor Castle survived the tumultuous period of the English Civil War, when it was used as a military headquarters by Parliamentary forces and a prison for Charles I. At the Restoration of the monarchy in 1660, Charles II rebuilt much of Windsor Castle with the help of the architect Hugh May¹⁴, creating a set of extravagant Baroque interiors that are still admired. After a period of neglect during the 18th century, George III and George IV renovated and rebuilt Charles II's palace at colossal expense, producing the current design of the State Apartments, full of Rococo, Gothic and Baroque furnishings. Queen Victoria made a few minor changes to the castle, which became the centre for royal entertainment for much of her reign. Windsor Castle was used as a refuge by the royal family during the Luftwaffe bombing campaigns of the Second World War and survived a fire in 1992¹⁵. It is a popular tourist attraction, a venue for hosting state visits, and the preferred weekend home of Queen Elizabeth II, so it is still very much a lived in and working castle. You will have three hours at the castle which should be plenty of time to see everything, and don't forget to pick up your complimentary audio guides as they are full of interesting information.

Now if you can take a look at your map, you'll see the suggested walking route, but you don't have to follow this if you don't want to. To begin with, look at the centre bottom of the map, that is ticket office where you will be given your audio guides. To enter the castle proper, I will walk you down the street and left into Castle Hill street. On the right as we walk to castle are the Jubilee Gardens¹⁶ which are not part of the tour but are lovely to walk through, some of you might want to do that before entering the castle proper.

Windsor Castle occupies 13 acres and combines the features of a fortification, a palace, and a small town. It has two basically rectangular courts that are separated by the Round Tower on the hill in the middle. The western court is the lower ward¹⁷, and the eastern court is called the upper ward. The walking route takes you from the entrance, around the base of the round tower to the upper ward complex and into the state apartments. As the Queen is not in residence these are open to the public and well worth visiting. The rooms contain many historical and art treasures and Queen Mary's dollhouse. If you look out the southern windows you will also get a glimpse of the

quadrangle which is enclosed by the state apartments to the north, private apartments to the east and the south wing¹⁸.

After you leave the apartments, you can then go into the round tower itself. We have arranged for you to be able to go into the tower and climb to the roof which gives a spectacular view of the surrounding town and countryside.

After the round tower, go back the way you came, down the hill, towards the lower ward. On the north side of the Lower Ward is St George's Chapel the spiritual home of the Order of the Garter. At the east end of St George's Chapel is the Lady Chapel¹⁹, originally built by Henry III in the 13th century and converted into the Albert Memorial Chapel between 1863 and 1873 by Queen Victoria. At the west end of the Lower Ward is the Horseshoe Cloister, where the clergy live, and behind the Horseshoe Cloister is the Curfew Tower, one of the oldest surviving parts of the Lower Ward and dating from the 13th century. On the south side of the Ward is King Henry VIII's gateway²⁰, which bears the coat of arms of Catherine of Aragon and is where you will exit the castle and then head back to the bus. Remember to be at the bus by 4.45pm for our return to London.

But before you do you might want to have afternoon tea at the Undercroft Café which has recently opened to visitors in Edward III's medieval Undercroft, one of the oldest surviving spaces in the 1,000-year-old Castle. I will be there from 3.30pm onwards if you want to ask me any questions about Windsor.

Okay, we are arriving now at the carpark, so if you could all get ready and remember to take all your belongings with you

adapted from https://en.wikipedia.org/wiki/Windsor_Castle

Part 3

- Tutor Hi, so your presentation is a short history of human exploration, is that right?
- Shane Yes, from prehistory to the modern era.
- Jane Here's an outline we did of what we've organised so far.
- Tutor Thanks, hmm so it seems to focus on periods rather than people.
- Jane Yes, there is so much information that we decided to be quite general, except for people who really impacted the topic.
- Tutor So how will you introduce your topic
- Shane Well at first, we thought of just having a simple opening slide and a very then getting straight into the body of the presentation. But we think that maybe we need to define some terms in the introduction, to ensure that everyone can understand the rest of the presentation²¹.
- Jane Yeah, we especially want to make sure people understand the difference between exploration, discovery and invention, so we will make that clear in the introduction.
- Tutor That's a good idea, but please remember to keep it short. The introduction is supposed to be quite brief. You have a lot to cover, how are you going to organise it?
- Jane Well, luckily there seems to be consensus on the different eras, so we thought we could find the explorer that most epitomises each one and how they impacted exploration in that time²².
- Shane The other thing we've had to do is narrow our focus and concentrate mostly on European explorers, if we tried to include the whole world there is just too much to fit into the presentation.
- Jane But it's sad, I really wanted to include people like Zheng He²³, whose voyages were before most of the famous European voyages of discovery by Columbus, De Galla and Magellan but of the same era.
- Tutor So how many periods will that include then?
- Shane Only four actually. Ancient, from 5000 BCE to around 400 CE, Medieval which is from the 5th century to the 15th century, the age of discovery from the fourteen hundreds to sixteen hundreds²⁴ and the modern era from the 18th century to the present. We'll be presenting them chronologically, I think.
-
- Tutor That sounds sensible. So you've mentioned that for the introduction you were thinking of defining your terminology, I think that is a very good idea²⁵.
- Shane Okay, we will do that then, and keep it brief.
For the first section, ancient exploration we've decided to use Alexander the Great but what we really need to do is to find a good recent map²⁶ to show exactly how far he travelled and the modern names of the places he went to. We think that will make it easier for the audience.
- Jane Yeah, we can't assume that people are familiar with the ancient names. Although it might be a good idea to also place the ancient terms next to the modern ones, as all the sources use the ancient titles.
- Tutor I do think that it is important to use the ancient as well as the modern place names, so do make sure to include them. Now who are you using for the Medieval period?

- Jane The Vikings. I know most people don't see them as explorers, but they went to some many places and even America. They were innovative navigators and boat builders, which enabled their voyages of discovery. We do need to verify the sources for some of our information, but I think most of it is accurate.²⁷
- Tutor Yes, you must be able to get reliable and accurate sources and don't forget to include them all in your submission.
- Shane For the Age of discovery we have far too many explorers, which makes it harder. So instead of a person, we've gone with a country. Portugal was the first of the great exploring nations, so we are going to focus on its achievements and explorers like De Gama, Cabral, Magellan, and Dias. There is so much information, we will need to sit down and organise it all.²⁸
- Jane Yes, we've done all our research for this era, we just need to organise it now. It's a similar problem with the modern era, so we've decided to go with space exploration because it has had such an impact on the world, but culturally, politically and technologically.
- Shane It's also very modern!
- Tutor How are you going to present it though, choose an astronaut or program?
- Shane We are going to do it chronologically, from Sputnik 1, the first artificial Earth satellite to the current collaboration between governments and private interests. There are a lot of significant milestones, but we will only mention major ones, like landing on the moon for example. We still need to make a timeline, probably a decade per slide, we think that is the clearest way to present it.²⁹
- Jane For our conclusion, we thought we could ask the audience if they have any questions on what we've presented while recapping each era with a slide. We need to decide what style of slides to use for the recap³⁰, but we thought it would help to keep the questions focused on what we have presented.
- Tutor Well it all seems to be coming along well, once you've got a draft ready I'd like you to make an appointment and show me, it will be the last chance you have to get feedback before the presentation.

Part four

Lecture adapted from: <https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-00-introduction-to-computer-science-and-programming-fall-2008/video-lectures/lecture-1/>

PROFESSOR: Thank you. This is 6.00, also known as Introduction to Computer Science and Programming. My name is Eric Grimson, I have together Professor John Guttag over here, we're going to be lecturing the course this term. I want to give you a heads up; you're getting some serious firepower this term. John was department head for ten years, felt like a century, and in course six, ^{Q31} I'm the current department head in course six. John's been lecturing for thirty years, roughly. All right, I'm the young guy, ^{Q32} I've only been lecturing for twenty-five years. You can tell, I have less grey hair than he does. What I'm trying to say to you is, we take this course really seriously. We hope you do as well. But we think it's really important for the department to help everybody learn about computation, and that's what this course is about.

What I want to do today is three things: I'm going to start-- actually, I shouldn't say start, I'm going to do a little bit of administrivia, the kinds of things you need to know about how we're going to run the course. **Q33** I want to talk about the goal of the course, what it is you'll be able to do at the end of this course when you get through it, and then I want to begin talking about **Q34** the concepts and tools of computational thinking, which is what we're primarily going to focus on here. We're going to try and help you learn how to think like a computer scientist, and we're going to begin talking about that towards the end of this lecture and of course throughout the rest of the lectures that carry on.

Right, let's start with the goals. I'm going to give you goals in two levels. The strategic goals are the following: we want to help prepare freshmen and sophomores who are interested in majoring in course six to get an easy entry into the department, especially for those students who **Q35** don't have a lot of prior programming experience. If you're in that category, don't panic, you're going to get it. We're going to help you ramp in and you'll certainly be able to start the course six curriculum and do just fine and still finish on target. We don't expect everybody to be a course six major, contrary to popular opinion, so for those are you not in that category, the second thing we want to do is we want to help students who don't plan to major in course six to feel justifiably confident in their ability to **Q36** write and read small pieces of code.

For all students, what we want to do is we want to give you an understanding of the role computation can and cannot play in tackling technical problems. So that you will come away with a sense of what you can do, what you can't do, and what kinds of things you should use to tackle complex problems. And finally, we want to position all students so that you can easily, if you like, compete for things like your office and summer jobs. Because you'll have an appropriate level of confidence and competence in your ability to do computational problem solving. **Q37** Those are the strategic goals.

Now, this course is primarily aimed at students who have little or no prior programming experience. As a consequence, we believe that no student here is under-qualified for this course: you're all MIT students, you're all qualified to be here. **Q38** But we also hope that there aren't any students here who are over-qualified for this course. And what do I mean by that? If you've done a lot prior programming, this is probably not the best course for you, and if you're in that category, I would please encourage you to talk to John or I after class about what your goals are, what kind of experience you have, and how we might find you a course that better meets your goals.

Second reason we don't want over-qualified students in the class, it sounds a little nasty, but the second reason is, an over-qualified student, somebody who's, I don't know, programmed for Google for the last five years, is going to have an easy time in this course, **Q39** but we don't want such a student accidentally intimidating the rest of you. We don't want you to feel inadequate when you're simply inexperienced. And so, it really is a course aimed at students with little or no prior programming experience. **Q40** And again, if you're not in that category, talk to John or I after class, and we'll help you figure out where you might want to go.

OK. Those are the top-level goals of the course. Let's talk sort of at a more tactical level, about what do we want you to know in this course. What we want you to be able to do by the time you leave this course?

Reading Answers and Explanations

Passage 1 Answers

1. TRUE
2. NOT GIVEN
3. TRUE
4. FALSE
5. NOT GIVEN
6. FALSE
7. FALSE
8. TRUE
9. priest
10. amplifier
11. patented
12. Westinghouse
13. proof

Nikola Tesla

The man who invented the 20th century

Nikola Tesla was of unusual intellectual brilliance. The Serbian-American inventor, physicist, mechanical engineer and electrical engineer could reason, plan, and solve problems in his head. He could think abstractly and comprehend ideas without putting pen to paper. His patents (over 225 in the United States) and theoretical work still form the basis for modern alternating current electric power systems (including the polyphase system power distribution system). Tesla helped usher in the Second Industrial Revolution and is regarded as one of the most important inventors in history.

Tesla was born "at the stroke of midnight" in 1856 during a lightning strike in a summer storm (the first moment of July 10). The midwife commented, "He'll be a child of the storm," to which his mother replied, "No, of light." He was born in Smiljan near Gospić in Croatia, Lika. His Baptism Certificate reports that he was born on June 28 (Julian calendar; July 10 in the Gregorian calendar) 1856, and christened by the Serbian orthodox priest, Toma Oklobdžija. Tesla was baptised in the Old Slavonic Church rite.

His father was Rev. Milutin Tesla, a Serbian priest⁹ in the Orthodox Metropolitanate of Karlovci which gathered the Serbs of the "Greek-rite" as they were legally referred to in Habsburg Monarchy at the time. His father's church in Gospić was destroyed in the 1990s. His mother was Đuka Mandić, a housewife talented at inventing useful household tools. Although very smart and with an excellent memory, she had to take care of her siblings when her mother, Sofia Budisavljevic, died. Nikola Tesla's mother was a great influence on him. Nikola was one of five children, having one brother and three sisters. His godfather, Jovan Drenovac, was a Captain in the Krajina army. His family moved to Gospić in 1862.

Tesla went to school in Karlovac. After he graduated from a prestigious High School, he went back to Gospić during the summer to see his family and almost died of cholera. Tesla, who loved science, was afraid that as his older brother had died, he would have to continue the family tradition and become a priest.¹ He asked his father if he could study engineering if by miracle he survived, and the father promised his dying son to send him to the best school in the whole world. Nikola's health improved quickly, and his father sent him to study at the Austria Politechnic in Graz, Austria, in 1875.

In 1881 he moved to Budapest to work for the telegraph company, American Telephone Company. On the opening of the telephone exchange in Budapest, 1881, Tesla became the chief electrician to the company. He also developed a telephone repeater (sometimes called an amplifier).¹⁰ The device could act as an audio speaker. The invention was never patented¹¹ nor released publicly (till years later by Tesla himself). The device also contained the characteristics of modern wireless telephones. In 1882 he moved to Paris to work as an engineer for the Continental Edison Company. He worked designing improvements to electric equipment. In the same year, Tesla conceived of the induction motor and began developing various devices that use rotating magnetic fields (for which he received patents in 1888). Tesla visualized the rotating fields and thereby designed the induction motor.

Later in 1882, Tesla hastened from Paris to his mother's side as she lay dying, arriving hours before her death in 1882. Her last words to him were, "You've arrived, Nidzo, my pride." After her death, Tesla fell ill. He spent two to three weeks recuperating in Gospić and the village of Tomingaj near Grač, the birthplace of his mother. All his life, Tesla kept a home-spun embroidered travel bag from his mother.

In 1884, Tesla moved to the United States of America to accept a job with the Edison Company in New York City. He arrived in the US with 4 cents to his name, a book of poetry, and a letter of recommendation from Charles Batchelor (his manager in his previous job) to Thomas Edison. The letter read simply "I know two great men, and you are one of them. This young man is the other".³ Tesla's work for Edison began with simple electrical engineering. Eventually Tesla earned the respect of Edison and offered to undertake a complete re-design of the Edison company's DC dynamos. After Tesla described the nature of the benefits from his proposed modifications, Edison offered him US\$50,000 if they were successfully completed. Tesla worked for nearly a year to redesign them and gave the Edison company several enormously profitable new patents in the process. However, Edison then reneged on his offer of \$50,000 only giving Tesla a \$10 per week raise instead.⁴ Tesla resigned on the spot and never received any remuneration for all his hard work.

Westinghouse also hired Tesla for one year to help develop a power system using alternating current.¹² The advantage that popularized alternating current is the use of transformers for long distance electric power transmission. Tesla is also known for his high-voltage, high-frequency power experiments in New York and Colorado Springs, Colorado which included inventions and ideas used in the invention of radio communication, for his X-ray experiments, and for his unsuccessful attempt at worldwide wireless transmission in his unfinished Wardenclyffe Tower project.⁷

Tesla's achievements made him extremely famous. So did his abilities as a showman, demonstrating his seemingly miraculous inventions. Although he made money from his patents, he spent a lot on his experiments. He lived for most of his life in a series of hotels in New York City. The end of his patent income and eventual bankruptcy led him to live in much poorer circumstances.⁶ Tesla still continued to

invite the press to parties, he held on his birthday to announce new inventions he was working and make (sometimes unusual) statements. Because of his wonderful pronouncements without results or proof, Tesla gained a reputation in popular culture as the archetypal "mad scientist"¹³. Tesla's vision was to find a means to provide humanity the means for unlimited energy. He gave his life to make real these plans, while others made fortunes with his inventions.⁸ He died in room 3327 of the New Yorker Hotel on 7 January 1943, he was essentially destitute and died with significant debts..

Tesla's legacy can be seen across modern civilization wherever electricity is used. Aside from his work on electromagnetism and engineering, Tesla is said to have contributed in varying degrees to the fields of robotics, ballistics, computer science, nuclear physics, and theoretical physics. Many contemporary admirers of Tesla have deemed him the man who invented the twentieth century.

Sourced from: https://en.wikibooks.org/wiki/Nikola_Tesla/Print_version and https://simple.wikipedia.org/wiki/Nikola_Tesla

Passage 2 Answers

14. C – ... naturally more optimistic.... genetics .. key determinant...
15. H – Five agreed-upon factors
16. D – ... avoid difficult emotions, provide happiness, but only momentarily...
17. B – ..avoiding overthinking...
18. E – ..Difficult experiences ... render happy moments even more joyous and special.
19. tenets
20. momentary pleasures
21. accomplishments
22. tweaks
23. life's joys – appreciate = savour
24. attribute – both behavioural geneticists and psychologists are scientists
25. genetics – 50% is half
26. bright outlook – aren't born with = do not have

The Science of Happiness

A

Although happiness can feel like an amorphous concept, science has explored key pieces of the experience, such as which choices, activities, and mindsets lead to fulfillment, common misunderstandings of happiness, and theories that may explain the origin and attainment of well-being. Finding satisfaction and contentment is a continual process. Psychologists have now identified many of the **tenets¹⁹** that help individuals along that journey.

B

Happiness incorporates curiosity, and the ability to tolerate risk and anxiety to discover new passions and facets of identity. It involves a balance between **momentary pleasure²⁰** and longer-term striving toward goals. It is abetted by friends and family who can both celebrate **accomplishments²¹** and provide support after failures. Happiness includes the ability to acknowledge and embrace every emotion, even the unpleasant ones. It involves seeing the big picture, rather than getting stuck in the details. Overall, being happy is to live with mindfulness, meaning, and purpose.

The key to lifelong happiness is taking time to cultivate small **tweaks²²** on a regular basis. Incorporating habits into your daily life such as keeping a gratitude journal, practicing kindness, nurturing optimism, learning to forgive, investing in relationships, finding flow activities, **avoiding overthinking¹⁷**, **savoring life's joys²³**, and committing to goals can make happiness a permanent fixture.

C

Some people are naturally more optimistic, positive, and content. Although genetics is, in fact, a key determinant of happiness¹⁴, people who gravitate toward pessimism are able to change their outlook (to an extent) by reframing negative thoughts and preventing self-criticism. Our genes may be what influences happiness the most. Behavioural geneticists and psychologists **attribute²⁴** about 50 percent of happiness to **genetics²⁵**, 10 percent to life circumstances, and 40 percent to personal choices. Even if people aren't born with a **bright outlook²⁶**, committing to improving their happiness on a regular basis can make a difference.

D

People often want to avoid difficult emotions, so they reach for quick fixes like tasty treats or luxurious purchases. Those indulgences provide happiness, but only momentarily¹⁶. Yet pinning all hopes of happiness on milestones like getting married, gaining fame, or becoming wealthy is also misleading. Lasting happiness occurs when we invest in meaningful goals, relationships, and values and develop skills to overcome distress.

E

People often believe that accomplishments like marriage and wealth will bring lasting happiness, and adverse experiences such as divorce or disease will bring unremitting sadness. But research reveals that bursts of happiness or sadness tied to specific life events are fairly short. Thoughts like “I’ll be happy when I get married” or “I’ll never recover from this diagnosis” turn out to be misperceptions and a meaningful life encompasses disappointments and loss. Difficult experiences can reveal our core values, motivate us to make change, and render happy moments even more joyous and special.¹⁸

F

Also, people are surprisingly bad at anticipating their future happiness. They tend to overestimate how joyous or upsetting events will be: A promotion will not provide unending fulfilment and a breakup will not be hopelessly tragic. People also recall experiences by the beginning, end, and intense or “peak” moments, rather than by the experience as a whole.

G

Money is also no guarantee of happiness. Many lottery winners wind up no happier than their peers down the road—and some face a distinct downturn, squandering their wealth, dealing with litigation, or navigating life with people who demand a share of the winnings. Yet research suggests that when lottery winners spend their money on basic necessities or moderate consumption, they feel more secure, fortunate, and happy.

H

Positive psychology is a school of thought devoted to understanding what leads people and communities to flourish. Five agreed-upon factors boost well-being¹⁵: positive emotion, engagement, relationships, meaning, and accomplishment. Beyond those overarching principles, specific models and concepts have emerged as well.

I

Every individual is born with a particular “happiness set point” or a baseline level of happiness, research suggests. After experiencing triumphs or tragedies, people adapt to their new circumstances and their emotions generally return to this genetically-determined level of well-being. However, commitment to compassion and altruism may help reset your happiness set point, as the trait most connected to long-term increases in life satisfaction. Helping others leads a person to be happier—perhaps due to higher self-esteem, a sense of self-worth, or a deeper sense of purpose, feeling that lives are important. Science has come a long way in determining what happiness is and how to achieve it, but there is still a long road to go. The only thing that everyone seems to agree on is that to acquire happiness, one must choose to be happy.

adapted from : <https://www.psychologytoday.com/intl/basics/happiness/the-science-happiness>

Passage 3 Answers

27. D

28. F

29. A

30. E

31. C

32. C

33. C – paying less for petrol and insurance is mentioned but it doesn't say cost will be reduced. Use of petrol will be reduced, but this doesn't mention cost either.

34. D

35. A

36. B – the car can only drive in a specified area, so not on ANY road, or deliver to ANY location.

37. cruise control

38. monitor

39. driver's seat

40. human intervention

Will we ever have self-driving cars?

Any avid reader of science fiction knows about automated vehicles but when will we actually have them on our roads?

What are Self-driving vehicles

Vehicles are increasingly equipped with automatic features, such as automatic parking, adaptive cruise control and stop-and-go control systems³⁴ and these automatic features are rapidly developing further. However, a fully automatic vehicle is one that can drive without the need for any human intervention at all, and this unfortunately we do not have²⁷.

Levels of driving automation

In SAE's automation level definitions, "driving mode" means "a type of driving scenario with characteristic dynamic driving task requirements (e.g., expressway merging, high speed cruising, low speed traffic jam, closed-campus operations, etc.) (1)

- Level 0: The automated system issues warnings and may momentarily intervene but has no sustained vehicle control.
- Level 1 ("hands on"): The driver and the automated system share control of the vehicle. Examples are systems like cruise control³⁷ and parking assistance. However, the driver must be ready to retake full control at any time.
- Level 2 ("hands off"): The automated system takes full control of the vehicle: accelerating, braking, and steering. The driver must monitor the driving^{28/38} and be prepared to intervene immediately at any time if the automated system fails to respond properly.
- Level 3 ("eyes off"): The driver can safely turn their attention away from the driving tasks, e.g. the driver can text or watch a movie. The vehicle will handle situations that call for an immediate response, like emergency braking. You can think of the automated system as a co-driver that will alert you in an orderly fashion when it is your turn to drive.
- Level 4 ("mind off"): As level 3, but no driver attention is ever required for safety, e.g. the driver may safely go to sleep or leave the driver's seat³⁹. However, Self-driving is supported only in limited spatial

areas or under special circumstances. Outside of these areas or circumstances, the vehicle must be able to safely abort the trip³⁶, e.g. slow down and park the car, if the driver does not retake control. An example would be a robotic taxi or a robotic delivery service that only covers selected locations in a specific area, at a specific service time.

- Level 5 ("steering wheel optional"): No human intervention is required at all^{29/32/40}. An example would be a vehicle which can do a full trip from the starting point to the destination. Another example would be a robotic vehicle that works on all kinds of surfaces, all over the world, all year around, in all weather conditions.

Why is it taking so long to develop?

The basic idea is that the cars are equipped with cameras and sensors that will 'map' their surroundings and enable the car to drive safely. However, this simple explanation obscures the mind-boggling complexity of the task. As Kelsey Piper of Vox says: "Following a list of rules of the road isn't enough to drive as well as a human does³⁰, because we do things like make eye contact with others to confirm who has the right of way³⁵, react to weather conditions, and otherwise make judgment calls that are difficult to encode in hard-and-fast rules⁽²⁾."

Although there have been major strides made in AI technology, almost all of these depend upon 'machine learning', that is giving the AI enough exposure to the situation that they can learn all the possible outcomes and so choose accordingly. To do this for self-driving cars would take millions of road hours and uncountable situations, and even then, the AI would only be able to respond to a previously encountered situation, and in real life, new things happen all the time. Therefore, the reality seems to be that fully automated vehicles are still some way off.

Benefits of self-driving vehicles

Self-driving cars and lorries have significant benefits. Ninety percent of traffic accidents can be attributed to human error. This means that self-driving vehicles have a significant potential to reduce the risk of road accidents³³. Self-driving and ITS have potential to reduce emissions and improve efficiency. Platooning for instance, which allows trucks to follow one another more closely, reduces the effect of air resistance. This can lead to a 5%-15% reduction in fuel consumption, with a comparable reduction in CO₂ emissions. Communication between vehicles can have a positive impact on traffic flows. For example, coordination with respect to braking and accelerating will result in fewer unnecessary tailbacks⁽³⁾.

Self-driving cars will also make life easier for people with mobility issues like the disabled, and those who do not drive or can no longer drive such as the elderly. They may be cheaper than owning a car as there is no longer a need to pay for petrol, insurance and the cost of the vehicle.³¹ Imagine a fleet of autonomous Ubers, for example. Transportation that you don't have to maintain but is conveniently available for you when you need it.

So why are we preserving?

Whoever does make the first driverless car is probably going to make a lot of money. For these reasons, governments and tech companies are persevering in their search for a truly autonomous vehicle. The Netherlands are one example. The Netherlands firmly believes in the potential benefits for significant change in road mobility with the introduction of cooperative Intelligent Transport Systems (ITS) systems. Innovations in this field should allow them to improve traffic flows on their roads in terms of safety, efficiency and environmental impact, and can be an important boost to Europe's competitive strength, jobs opportunities and growth. By establishing the Netherlands as a country for testing automated cars and ITS systems, the minister wants to make the Netherlands a fertile breeding ground for this kind of innovation and facilitate these developments⁽³⁾.

The Future of Self-Driving Cars

For now, the future of automated vehicles will probably be similar to what we currently enjoy. Our cars will continue to get smarter and employ more automation to do with parking, choosing routes, alerting us to speed limits and so on but it will be many years yet before truly automatic vehicles appear simply because of the hours needed to train the AI's involved.

Self-driving cars are on the horizon, it's just that the horizon, like always, is a long way away.

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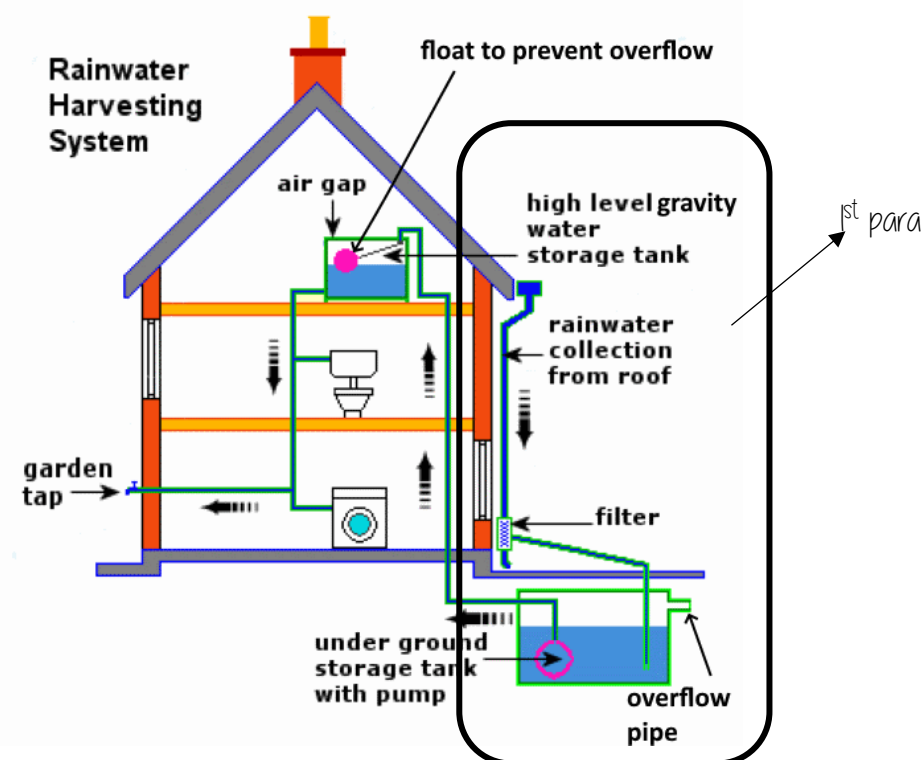
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Writing Model Answers

these are only model answers, there are many other ways of writing answers and getting a good score.

Task 1

The diagram below shows how rainwater is collected to be used for all household uses except drinking and cooking.



Summarise the information by selecting and reporting the main features and make comparisons where relevant.

Write at least 150 words.

Model Answer

The diagram explains how a household rainwater harvesting system works for non-potable water.

To begin the process, rainwater is collected from the roof and gutter system and fed to an underground storage tank, via a filtered pipe. The underground storage tank has both an overflow pipe, so that the tank doesn't overflow when there is a large amount of water being fed into it, and a pump so that the water can be sent to the tank in the roof space of the house.

This container, called a high level gravity water storage tank contains the water that supplies the house. The reservoir has a float to prevent overflow and maintain the air gap. The water is sent via a series of pipelines to all the appliances in the house that use the water such as toilets and the washing machine. Basically, anything that does not involve cooking or drinking of the water. The water is also diverted to outside the house to garden taps for uses such as gardening or washing vehicles.

Task 2

You should spend about 40 minutes on this task.

Write about the following topic:

Many people say that it is more advantageous to have virtual meetings, whereas other people say online communication is not as effective as everyone being in the same room together.

Discuss and give your opinion

Give reasons for your answer and include any relevant examples from your own knowledge or experience.

Write at least 250 words.

Advantages – no travel, easy organise, environment

Disadvantages – poor IT, don't know how to use

Model Answer

For many reasons it is often advantageous to have meetings over the internet rather than face to face. However, there are some disadvantages as well.

The benefits of online meetings are manifold. Firstly, they save a large amount of money in travel costs, especially if reaching the business meeting requires taking a flight. Secondly, because travel is negated there are concomitant advantages to the environment as well, such as a reduced carbon footprint and use of fuels.

One of the main advantages of virtual meetings is that it is easier to organise a time that accommodates everyone since they can join the meeting from any place that suits them. This is also extremely helpful for consultations that involve people from different countries or time zones as there is no need to compel colleagues travel so they can be in the appropriate place and time, instead they can join the meeting from wherever they are when it occurs.

There is however, one major disadvantage to online discussions. These meetings assume that all the participants have adequate internet speeds and a device able to manage the video required during the interaction. However, this is not always the case. It can be very frustrating when the video buffers, or the participants drop out altogether but then again, improving the IT technology used will usually remove this impediment. The other drawback is that numerous people do not know how to use the technology well enough to be able to participate. This can be alleviated through training, so it is not a permanent issue.

In my opinion, the advantages of online meetings far outweigh the disadvantages as these can be easily fixed by upgrading the technology or training the participants.



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jentoesol@hotmail.com



<https://ieltsnesolkuching.weebly.com/>