



**SEMESTER 1
2020-21**

**EE220FZ
Intelligent and Connected Machines in Society**

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Time allowed: 2 hours

Answer **ALL** parts of Question 1 and **ONE** part of Question 2

Instructions

	Yes	No
Log Books Allowed	X	
Formula Tables Allowed	X	
Other Allowed (<i>enter details</i>)		X

General (*enter details*)

- 1** Write brief answers for **each** of the following questions. Answers [60 marks]
should typically be between 40 and 100 words.
- (a) Explain the difference between autonomous and semi- [5 marks]
autonomous machines.
 - (b) With reference to a case study, describe an event where a 'man [5 marks]
in middle' was undesirable / ineffective.
 - (c) Explain the difference between intentional an unintentional [5 marks]
design error. Give an example of each.
 - (d) What is white hat hacking and how can it be used to improve [5 marks]
autonomous systems?
 - (e) What is meant by the idea of 'Artificial Stupidity'? [5 marks]
 - (f) What does GDPR stand for and what are it's main objectives*? [5 marks]
 - (g) Explain what 'Moral Status' is and how it relates to the issue of [5 marks]
the ethical treatment of robots.
 - (h) What is meant by the 'Uncanny Valley'? You may use a diagram [5 marks]
to assist your description.
 - (i) Reliability is about handling faults. List and explain the different [5 marks]
methods that should be used to prevent failures.
 - (j) List and explain the key features that designers should consider [5 marks]
when designing a robot or machine to be likeable.

Question 1 is continued on the next page...

- (k) Explain with the aid of a diagram what an S-curve is and why it is important to be aware of them in industry. [5 marks]
- (l) What is IP? How is it useful? [5 marks]

2 Write an essay on **ONE** of the following topics [40 marks]

- (a) The idea of autonomous transport has become more popular. This has raised legal issues like 'If someone has had alcohol, do they have the legal authority to tell an autonomous car to take them home?'. Discuss the legal issues that automation has raised in the context of self-driving cars. You should include 5 of the 8 topics that are listed in the notes regarding legal considerations.

Or

- (b) Explain what is meant by Weak AI and Strong AI. Compare and contrast Weak AI and Strong AI in terms of the ethical implications that may arise from the use of child-minding robots. You should discuss this topic with relation to 4 of the headings listed in the notes regarding ethical considerations.

Or

- (c) Society is automating more and more jobs. This will change the nature of employment and what jobs are available to humans in the future. How do you think the employment market will have changed in 50 years and why? Give an example of 2 jobs that, in your opinion, will have been automated and 2 jobs that will not have been automated (4 jobs total). Justify your selection in each case.

Please note:

This must be a substantive essay. It should contain between 1000 and 2000 words (approximately 3 - 5 pages). Marks will be provided for both the validity of the content, the structure, and quality of the essay.