Question	Answer	Marks
2(a)	**1 mark** per bullet point to **max 2** • To make sure the team members feel valued • To get the best work out of the team • To enable them to work well together • To enable them to create the best product for the client	2
2(b)	**1 mark** per bullet point to **max 3** • The rules / past moves / decision making algorithms of the game will be stored • The AI program is trained, by playing many times • AI will look (ahead) at possible moves • ... and/or analyse the pattern of past choices • … and choose the move most likely to be successful • Computer could learn how to improve // learn from previous mistakes • … by storing the positive/negative result of choices • ... and changing its future choices	3
2(c)	**1 mark** for each correct column	4

Statement	Free Software Foundation	Open Source Initiative	Shareware	Commercial Software
The user can edit the source code	✓	✓		
The user **must** always pay before being able to use the software				✓
The user can redistribute the software	✓	✓	✓	
The user always gets a trial period			✓	

Question	Answer	Marks
7(a)	**1 mark** per bullet point to **max 2** • Program libraries store pre-written functions and routines • The program library can be referenced/imported • the functions/routines can be called in her own program	2
7(b)(i)	**1 mark** per bullet point to **max 4; max 3** from each section Interpreter: • Use an interpreter while writing the program • … to test/debug the partially completed program • … because errors can be corrected and processing continue from where the execution stopped // errors can be corrected in real time // errors are identified one at a time Compiler: • Use the compiler after the program is complete • … to create an executable file • Use the compiler to repeatedly test the same (completed) section • … without having to re-interpret every time // compiler not needed at run-time	4
7(b)(ii)	**1 mark** per correct tool to **max 2** e.g. • Breakpoints • Single stepping • Report windows	2

Question	Answer	Marks
4(a)	**1 mark** per bullet point to **max 3** e.g. • He has ethical guidelines to follow • … so clients/other staff know the standards being applied • … so he does not have to decide what is ethical it's written down • Clients / staff know he is reputable • … recognition of his skills / knowledge • … there may be a test / requirements for entry • They provide help and support • … for example if he needs legal advice • They run training courses • … to keep his skills up-to-date	3
4(b)(i)	**1 mark** per bullet point to **max 2** e.g. • He can tell the manager he has not used it • … and how he will get up-to-date • He can perform his own research on how to use it • He can explain to the manager that he needs additional training • He can(ask the manager to book on a training course • He can ask for a mentor / to shadow someone • He can practice at home before starting	2
4(b)(ii)	**1 mark** for each correct tool e.g. • Colour coding // pretty printing • Auto-complete • Auto-correct • Context sensitive prompts • Expand and collapse code blocks	3
4(c)	**1 mark** per bullet point to **max 2** e.g. • He didn't act in best interest of product • … because the product might fail because he didn't report the error • He didn't act in best interest of client • … because if the product does not work then they have been let down because he didn't report the error • He didn't act in the best interest of the profession • … he is letting his profession down because he didn't report the error • He didn't act in best interest of the company • ... not correcting the error early could lead to later problems	2

Question	Answer	Marks
5(a)	**1 mark** for 1 correct line, **2 marks** for 2 correct lines, **3 marks** for 3 or 4 correct lines, **4 marks** for all 5 correct lines	4

IDE feature — **Description**

IDE feature	Description
Context-sensitive prompt	Displays predictions of the code being entered
Dynamic syntax check	Underlines or highlights statements that do not meet the rules of the language
Breakpoint	Stops the code executing at a set line
Single stepping	Executes one line of the program and then stops
Report window	Outputs the contents of variables and data structures

Descriptions listed:
- Executes one line of the program and then stops
- Underlines or highlights statements that do not meet the rules of the language
- Outputs the contents of variables and data structures
- Stops the code executing at a set line
- Displays predictions of the code being entered

Question	Answer	Marks
5(b)	**1 mark** each: • Open Source Initiative • Free Software Foundation	2

Question	Answer	Marks
1	**1 mark** for each licence correctly identified	3

Software licence   **Description**

Shareware	→	A limited version of the game could be released and downloaded by anybody, but users would need to pay to unlock additional features

A licence **must** be purchased to use the software

The software **cannot** be downloaded from the Internet

Open Source	

Commercial	

The original source code is made available for other developers who can then modify and improve the software

Question	Answer	Marks
7(a)	**1 mark** per bullet point for each justification, to **max 2** **Either** Unethical • Marina knowingly produces a solution that is not as efficient as it could be • …and this does not enhance the reputation of the person/company • Reference to IEEE standards in context **Or** Ethical • Marina acts in the best interests of the employer to complete a working product on time • …that is more likely to be correct as the coding is simpler • Reference to IEEE standards in context	2
7(b)	**1 mark** per bullet point for each justification, to **max 2** **Either** Unethical • Doug has a management responsibility • …to be fair to his colleagues • …but is showing a lack of personal integrity by applying pressure • Reference to IEEE standards in context **Or** Ethical • Doug is trying to act in the best interests of his employer/client • …and may be asking employees to voluntarily offer to work additional hours • …he may be paying them extra • Reference to IEEE standards in context	2
7(c)	**1 mark** per bullet point for each justification, to **max 2** **Either** Unethical • Debbie may be breaking company policy discussing current projects // confidentiality • …and has a duty to act in the best interests of his company • …and should have raised her concerns internally • Reference to IEEE standards in context **Or** Ethical • Debbie may feel that in the public interest the problem should be discussed • …to ensure that a safety critical system is fully tested • …so as to prevent potential loss of life • Reference to IEEE standards in context	2

Question	Answer	Marks
3(a)(i)	**1 mark** per bullet point to **max 2** Product: For example: • Ensure product is of a high standard • Ensure product meets requirements • Ensure the product is delivered within time • Ensure the product is delivered within budget • Ensure product development is well-documented • Ensure product is tested thoroughly // free of bugs	2
3(a)(ii)	**1 mark** per bullet point to **max 2** Colleagues: For example: • Need to be fair// do not show any prejudices • To be supportive of colleagues • Work together as a team • Listen to each other's ideas • Assist colleagues in professional development • Fully credit the work of other members of the team • Make colleagues aware of expected standard ways of working	2
3(b)	**1 mark** for naming licence, **1 mark** for description to **max 2** per licence • **Commercial** / proprietary... • ...Software is sold for a fee therefore giving the client the income • **Shareware**... • ...Free for a trial period / limited features, and then users must pay for it	4