T-LEVELS | Institute for Apprenticeships & Technical Education

Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | Learner ID

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T Level Technical Qualification in Digital Production, Design and Development (Level 3)

Wednesday 5 June 2024

Morning (Time: 2 hours 30 minutes)

Paper reference **19536**

Core: Examination

PAPER 1: Digital Analysis, Legislation and Emerging Issues

You do not need any other materials.

Total Marks

Instructions

- Use **black** ink or ball-point pen
  – *a pencil may be used for drawings.*
- **Fill in the boxes** at the top of this page with your name, centre number and Pearson learner ID.
- There are two sections in this question paper. Answer **all** questions in Section A and Section B.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*

Information

- The total mark for this paper is 100.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

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SECTION A

Answer ALL questions. Write your answers in the spaces provided.

1 **Figure 1** shows a section of Python code.

```
1  ENTRY_COST = 12.50
2
3  NumofTickets = input("How many tickets do you wish to buy?")
4  NumofTickets = int(NumofTickets)
5
6  CostofTickets = NumofTickets * ENTRY_COST
7
8  print("Total cost is", CostofTickets)
9
```

Figure 1

(a) Identify **one constant** used in the program shown in **Figure 1**.

(1)

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(b) Identify **one variable** used in the program shown in **Figure 1**.

(1)

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(c) Describe how accepted style conventions have been used to make the code in **Figure 1** more readable.

(3)

(d) Explain why **line 4** in **Figure 1** is needed.

(3)

(Total for Question 1 = 8 marks)

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2 State **two** professional organisations that provide guidance on accessibility and quality in IT systems.

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(Total for Question 2 = 2 marks)

3 Describe how company culture can be established.

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(Total for Question 3 = 3 marks)

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4 An application is being written for a decorating company. Some Python code from the application is shown in **Figure 2**.

The code does not work as intended.

```
 1  Area = 0.0
 2
 3  Length = input("Enter length of wall")
 4  Height = input("Enter height of wall")
 5
 6  if Area > 100.0:
 7    print("This job will take more than one day")
 8
 9  Area = float(Length)   *   float(Height)
10
```

Figure 2

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(a) Describe how a mathematical operator has been used in the code shown in **Figure 2**.

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(b) Explain why the code written in **Figure 2** will not work as intended.

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(Total for Question 4 = 6 marks)

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5 An application is being written for a camp site. One function is shown in **Figure 3**.

```
1  def calc_cost(NumofNights, Month):
2      if Month > 4 and Month < 9:
3          NightlyCost = 30
4      else:
5          NightlyCost = 28
6      TotalCost = NumofNights * NightlyCost
7      return TotalCost
```

Figure 3

(a) Write a line of code that will store the total cost of a 6 night stay in month 12.

(4)

(b) Describe how the developer has used relational operators in the code.

(2)

(Total for Question 5 = 6 marks)

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6 A program is needed that will calculate the difference between two whole positive numbers.

For example if the numbers 2 and 6 are entered then the difference is 4, if the numbers 10 and 8 are entered the difference is 2.

The program must:

a. Allow the user to enter the first number
b. Check that the number input is a whole positive number
c. Allow the user to enter the second number
d. Check that the number input is a whole positive number
e. Calculate the difference
f. Output the difference

Draw a flowchart that meets the rules of the program.

Use the space provided on the next page.

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(Total for Question 6 = 6 marks)

7 A company needs to develop a new program.

This program needs to be developed as quickly as possible, and the company has identified some components that can be reused from another project.

Evaluate the effectiveness of top down design when developing this program.

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(Total for Question 7 = 9 marks)

TOTAL FOR SECTION A = 40 MARKS

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SECTION B

Answer ALL questions. Write your answers in the spaces provided.

8 A company is developing a smartphone-based fitness app. This app will work with wearable technology to track user activities such as cycling, walking and running.

(a) The app will calculate how hard a user has trained during an activity and assign the activity a training level.

The app will use this logic to determine the training levels:

- Low level – A duration of less than 30 minutes.
- High level – A duration of more than 30 minutes and an average heart rate of more than 150 beats per minute.
- All other activities are considered medium.

The app will:

- receive the start time, end time and average heart rate
- calculate the duration of the activity
- calculate the training level of the activity
- output the training level of the activity.

Develop a section of code that will calculate and output the training level of an activity.

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(b) Describe **two** ways that the developer could use abstraction when developing the app.

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(c) Discuss the moral and ethical issues of using wearable technology to track user activities through a fitness app.

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(Total for Question 8 = 16 marks)

9 A company is developing new software to train student nurses.

(a) Explain **two** ways that an acceptable use policy will govern staff conduct when developing the software.

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(b) Explain **two** ways that a developer may express an algorithm.

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(c) The training software will be integrated with Augmented Reality (AR) and Virtual Reality (VR).

Evaluate the use of AR and VR to train nurses.

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10 An online game is being developed. One module being developed will be used to process users' details.

(a) New users will be able to select a suitable username (e.g. Wizard82) and the amount of credit they wish to add to their account (e.g. 7.89).

Explain the most appropriate data type for **each** variable.

(4)

Username

Credit_Added

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(b) The user must also enter their mobile phone number.

One suitable validation technique to check the data entered would be a presence check.

Describe **two other** suitable validation techniques that could be used for this data.

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(c) Describe how the developer would prepare automated test tools when unit testing this module.

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(d) Personal information about users will be held in this system.

Explain **two** ways that the company can ensure that it meets the requirements of data protection laws.

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(e) A developer is writing a module that allows users to log on to the online game.

One function of this module will be to search through a list of registered usernames to find the user details.

Evaluate the suitability of using linear and binary search algorithms to search through the user list for a specific username.

Your evaluation should include:

- the benefits and drawbacks of **each** search algorithm
- a supported conclusion as to which algorithm the developer should choose.

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(Total for Question 10 = 27 marks)

TOTAL FOR SECTION B = 60 MARKS
TOTAL FOR PAPER = 100 MARKS

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