**Name:** _____ **Class:** _____

**JURONG PIONEER JUNIOR COLLEGE**
**2025 JC 2 H2 Computing**
**Written Quiz 1**

25

**COMPUTING** **Syllabus 9569**
**Higher 2** **23 February 2024**
**40 minutes**

**1** The Singapore Dragon Boat Festival (SDBF) is an annual two-day event featuring multiple dragon boat race events held consecutively. The event organiser requires specific information to manage participating teams, and personnel.

Each dragon boat team has a team name and a unique 3-digit ID. And each team consists of personnel (paddlers and one team manager). The team manager is responsible for all administrative matters and serves as the point of contact between the team and the organiser. The team manager does not participate in paddling.

During the two-day event, each personnel is assigned a unique 7-digit ID and must provide their name, gender, contact number, and the team they represent. In addition, the medical history of paddlers and the email contact of the team manager are required.

The event organiser engages a software company to develop a program to manage the information of the SDBF. The software company has decided to use object-oriented programming to develop the program.

**(a)** Draw a class diagram to represent the following for the classes – **`Personnel`**, **`Paddler`**, **`Manager`**, and **`Team`**:

- Inheritance (IS-A relationship)
- Composition (HAS-A relationship)
- Polymorphism
- Attributes
- Appropriate methods (at least one pair of get and set methods for each class)

[12]

**(b)** Explain the purpose of a superclass. [2]

**2** Suppose that a certain binary search tree has data that are integers between 1 and 1,000, and we search for **363**. Which sequence below cannot be the sequence of data compared? Explain why.

a) 2, 252, 401, 398, 330, 363

b) 923, 220, 911, 244, 898, 258, 362, 363

c) 924, 278, 347, 621, 299, 392, 358, 363 [3]

**3** In a computer game, players' **names and scores** are stored in a binary search tree, in **increasing order of score**. The binary search tree has its data inserted in the following order:

- Ryan, 18
- Bella, 25
- Joshua, 27
- Shane, 20
- Jasmine, 17
- Alexis, 21
- Leslie, 15

**(a)** Illustrate the binary search tree. [3]

**(b)** Write a descriptive algorithm for inserting data into the binary search tree. [5]

**END OF QUIZ**