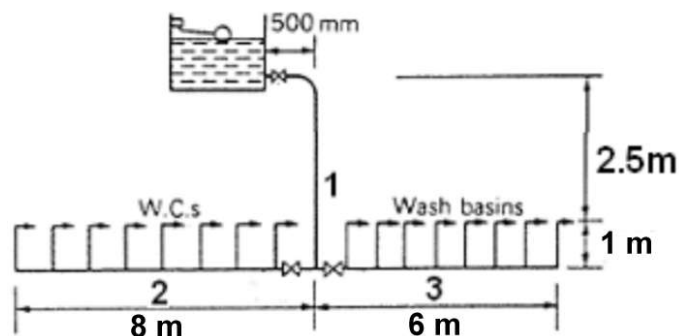


## **Assignment 01 – Water Supply Systems, Drainage and Sewage Disposal (2021-2022)**

### **1. Cold and Hot Water Supply Systems**

- 1.1 Draw a diagram to show the typical arrangement of cold water supply system for a high-rise building in Hong Kong. Show clearly all the important components and different sections of the water pipes. Explain the responsibility of the stakeholders for the waterworks and installations. (10 marks)
- 1.2 The Total Water Management (TWM) strategy in Hong Kong has mapped out the strategy for sustainable use of water to ensure water security and support the development of the society. Describe the major areas of the TWM strategy and discuss its implications to plumbing engineering design. (10 marks)
- 1.3 Compare direct system and indirect system for centralised hot water arrangement in buildings. Illustrate with schematic diagrams. (10 marks)
- 1.4 Explain the meaning of “dead legs” in hot water systems and suggest two methods to avoid them to reduce the risk. (10 marks)
- 1.5 Water supply from a cistern is shown on the diagram below. Develop a table to do the pipe sizing for the three pipe sections (number 1, 2 and 3) as shown on the diagram. Show clearly all the assumptions and calculation results.



- (10 marks)
- 1.6 Briefly describe the pros and cons of using the following pipe materials in water supply systems: (a) copper, (b) stainless steel and (c) polyvinyl chloride - unplasticized. Indicate the jointing methods suitable for each of them. (10 marks)

### **2. Sanitation and Drainage**

- 2.1 Briefly explain the possible reasons for the loss of water seal in building drainage systems. Illustrate with diagrams. (10 marks)

- 2.2 The sanitary drainage system could be a risk for the spread of COVID-19 and SARS disease in high-rise residential buildings. Briefly explain the possible disease transmission paths and discuss the possible methods to prevent this. (10 marks)

### **3. Sewage Disposal**

- 3.1 Explain the three common acceptance tests of drainage systems. Illustrate with diagram(s). Discuss the safety precautions for doing testing and maintenance in underground manholes. (10 marks)
- 3.2 Explain the benefits and limitations of water reclamation in buildings. Discuss the design issues for grey water reuse and rainwater harvesting. Illustrate with diagrams. (10 marks)