

**POLITEKNIK**  
Jabatan Pengajian Politeknik

EXAMINATION AND EVALUATION DIVISION  
DEPARTMENT OF POLYTECHNIC EDUCATION  
(MINISTRY OF HIGHER EDUCATION)

CIVIL ENGINEERING DEPARTMENT

FINAL EXAMINATION

JUNE 2012 SESSION

**CA205: BUILDING SERVICES 1**

**DATE : 18 NOVEMBER 2012(SUNDAY)**

**DURATION : 2 HOURS (02.30 PM - 4.30 PM)**

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This paper consists of **FOURTEEN (14)** pages including the front page.  
Section A: Objective (25 questions – answer all)

Section B: Essay (4 questions – answer 3 question only)

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**CONFIDENTIAL**

**DO NOT OPEN THIS QUESTION PAPER UNTIL INSTRUCTED BY THE CHIEF  
INVIGILATOR**

(The CLO stated is for reference only)



**SECTION A**

**OBJECTIVES (25 marks)**

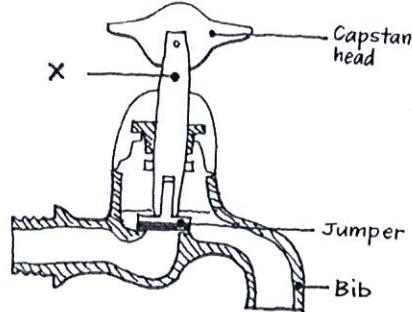
**INSTRUCTIONS:**

This section consists of **TWENTY FIVE (25)** objective questions. Answer **ALL** the questions in the answer booklet.

1. Which the following explain the process of sedimentation in water treatment?  
(CLO1)
  - A. The solid flocculants formed settles through gravity.
  - B. Short detention time is required for smaller size flocculants to settle.
  - C. The settled flocculants form sludge and must be remained in the tank.
  - D. Water flow to settling tank for settling process of the flocculants which is formed during aeration process.
  
2. Listed are the characteristic of water distribution system, **EXCEPT**; (CLO1)
  - A. Able to supply clean water sufficiently.
  - B. Ineffective distribution system.
  - C. Piping system is able to supply water continuously with minimum maintenance.
  - D. Distribution system should used quality materials.

3. The picture is a Bib tap.

(CLO1)



Label 'X' is.....

- A. Pillar
  - B. Spindle
  - C. Valve.
  - D. Nozzle
4. Why is indirect system a better system compared to direct system in water supply in the building? (CLO2)
- A. Large capacity storage tank, provides a reserve of water during the failure of the main supply.
  - B. Complicated pipework and expensive to install.
  - C. The water pressure on the taps supplied from the cistern is reduced.
  - D. Fittings supplied with water from the cistern are prevented from causing contamination.

5. Which of the following is suitable for hot water supply? (CLO2)
- A. Copper and mild steel.
  - B. Galvanized iron and Polyvinyl Chloride.
  - C. Copper and Polypipe.
  - D. Copper and Polyvinyl Chloride.
6. Which of the following are the types of urinal ? (CLO 1)
- i. Slab type
  - ii. Corner type
  - iii. Corral type
  - iv. Bowl type
- A. i & ii
  - B. i, ii & iii
  - C. i, iii & iv
  - D. ii, iii & iv
7. Which type of trap is not suitable in a drainage system: (CLO1)
- A. 'S' trap standard
  - B. bell trap
  - C. 'P' trap
  - D. drum trap

8. Which component prevents gases from entering a home or building ?

(CLO2)

- A. Gas Pressure Valve
- B. Anti- Gases Trap
- C. P- Trap
- D. Atmospheric Pressure

9. Which of these fittings used for connecting the P- Trap to the drain ?

(CLO2)

- A. Union
- B. Coupling
- C. Trap Adaptor
- D. Clamp

10. The statement are the characteristic of two pipe system in soil and waste management **EXCEPT**:-

(CLO 1)

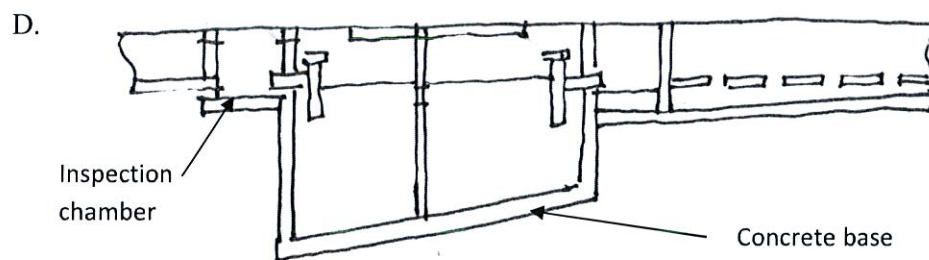
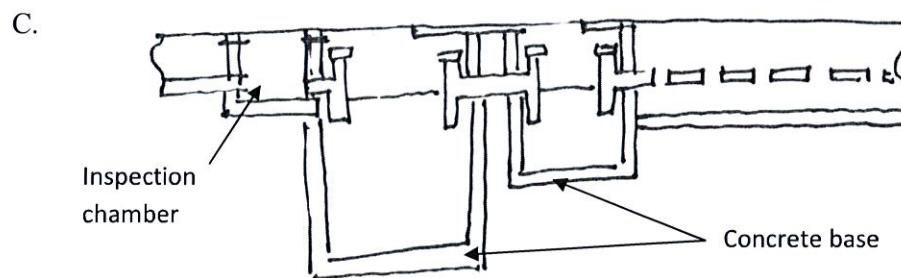
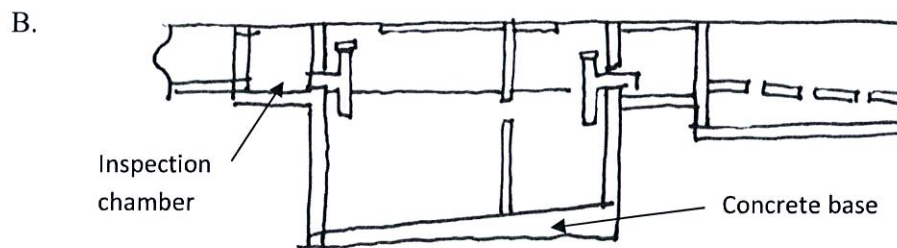
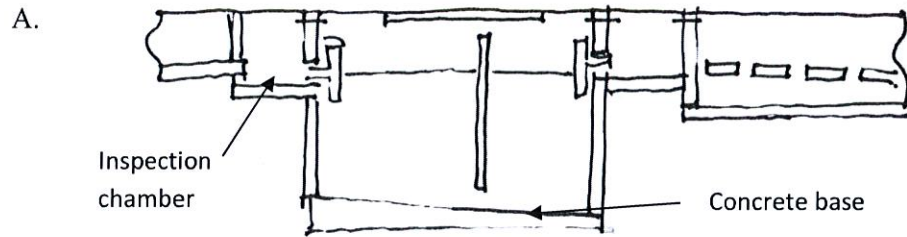
- A. It needs vent pipe
- B. It uses two single stack system
- C. Two pipes are needed the waste
- D. No need branch pipe attached the system

11. What is the main principle to be considered in soil and waste system? (CLO 1)
- A. Water system of sanitary fittings in the building and rainwater are channelled into drainage pipes that will be sent to the same removal / disposal.
  - B. Waste materials from sanitary fittings such as wash basins and bath are emptied into a drainage pipe to be sent to the removal tank.
  - C. Should be designed to carry away discharge from sanitary fittings efficiently, quickly and quietly.
  - D. To prevent excessive losses of water entering the tank.
12. What is the most importance factor in the process of removing waste water. (CLO 2)
- A. Diameter of the discharge pipe.
  - B. Noise caused by sanitary appliances.
  - C. Types of sanitary appliances.
  - D. The number of pipes.
13. All of this statement are TRUE about Public Sewer Separated Method **EXCEPT** ;? (CLO 2)
- A. Larger pipe diameter.
  - B. Consist of two pipe systems.
  - C. Higher pipe installation cost.
  - D. Smaller pipe diameter.

14. Underground drainage pipe requires chamber for inspection. The chamber is;  
(CLO 1)
- A. Storage tank
  - B. Aeration tank.
  - C. Gully trap
  - D. Manhole
15. What is the different between clay drainage pipe and cast iron drainage pipe?  
(CLO 2)
- A. Clay drainage pipe did not able to resist corrosion
  - B. Cast iron drainage pipe is suitable to be install when there is high load on the ground
  - C. Cast iron drainage pipe is suitable for large diameter conduit
  - D. Clay drainage pipe have high elasticity



16. Choose the correct diagram picture that shows the cross-section of a two-chamber septic tank. (CLO 2)





17. Combined public sewer method has these characteristics, **EXCEPT**; (CLO 2)

- A. There exist high volumes of flow in a pipe.
- B. It can easily overflow during heavy rainfall.
- C. It employs dual piping system.
- D. It employs single piping system.

18. A combined system is a system that drains..... (CLO 1)

- A. Surface water and waste water
- B. Waste, wastewater and surface water
- C. Surface water and waste
- D. Waste and wastewater

19. Aeration tank → Final clarifier → Chlorine contact tank  
The process is the ..... in wastewater treatment plant. (CLO 1)

- A. Preliminary treatment
- B. Primary treatment
- C. Secondary treatment
- D. Sludge treatment

20. In order to produce a well-oxidized liquid affluent, a number of biological methods exist, **EXCEPT** : (CLO 1)
- A. Trickling Filter
  - B. Rotating Biological Contactor
  - C. Comminutor
  - D. Activating Sludge System
21. Which of these bacteria doesn't work in the wastewater treatment pond? (CLO2)
- A. Aerobic
  - B. Anaerobic
  - C. Facultative Bacteria
  - D. Influenza A
22. Which of the following is true about the Rotating Biological Contactor? (CLO 2)
- A. The microbial growth occurs on rotating disks which are slowly dipped into the wastewater.
  - B. This comprises beds of fist-sized rocks or rubberised corrugated blocks over which the influent is sprayed.
  - C. Purification of raw sewage can be sped up considerably if the raw is mixed with activated sludge.
  - D. It is a circular grinder designed to grind solids coming through the screen into pieces of about 3mm.

23. These are the methods of refuse disposal that been conducted in Malaysia:  
**EXCEPT** (CLO 1)
- A. Land dumping
  - B. Incineration
  - C. Recycling
  - D. Pile in heap
24. Listed are the colours of the recycle bin practicing in Malaysia, **EXCEPT**, (CLO 1)
- A. Orange
  - B. Brown
  - C. Blue
  - D. Black
25. Garbage or waste from residential or industrial waste which is not desirable and requires a systematic management. Waste management covers several activities as follows. Which is NOT the one of activities? (CLO 1)
- A. Recycling or Removal.
  - B. Keeping
  - C. Processing.
  - D. Transportation.



**SECTION B**

**ESSAY (75 marks)**

**INSTRUCTION:**

This section consists of **FOUR (4)** essay questions.

Answer **THREE (3)** questions only.

**QUESTION 1 (25 Marks)**

- a) Name **THREE (3)** types of pipe joint for cold water supply system. [CLO2:C4]  
(3 marks)
- b) There are **TWO (2)** methods of distribution of clean water supply to the users.  
Describe each of the following: [CLO2:C4]
- i. Pump system
  - ii. Gravity and pump system (combination)
- (12 marks)
- c) Explain and sketch the direct and the indirect cold water supply system used for residential houses. [CLO2:C4]  
(10 marks)

**QUESTION 2 (25 Marks)**

a) Sketch the types of traps as below: [CLO2:C4]

- i. 'S' Trap.
- ii. Bottle Trap.

(4 marks)

b) Explain **THREE (3)** types of siphonage below with the aid of sketches:

[CLO2: C4]

- i. Anti-siphonage
- ii. Induced siphonage
- iii. Self siphonage

(12 marks)

c) There are **THREE (3)** systems employed in the installation of waste and wastewater discharge pipes. Explain the advantages and disadvantages of these systems: [CLO2:C4]

- i. One Pipe System
- ii. Dual Pipe System
- iii. Single Stack System

(9 marks)

**QUESTION 3 (25 Marks)**

a) Name 4 (FOUR) types of sewage treatment plant

(4 marks)

b) Give TWO advantage and TWO disadvantages of waste stabilizer pond.

(8 marks)

c) Sketch and explain briefly a rotating biological contractor treatment method.

(13 marks)

**QUESTION 4 (25 Marks)**

- a). What are the characteristics of good quality dustbin? [CLO2:C4]  
(6 marks)
- b). State THREE (3) methods generally used in refuse disposal. [CLO2:C4]  
(3 marks)
- c). Explain TWO (2) methods from (b). [CLO2:C4]  
(16 marks)