

## TEST 1

### SEMESTER II, SESSION 2017 / 2018

COURSE CODE: SKAA 2912

COURSE NAME: WATER TREATMENT

DURATION: 1 HOUR

DATE: APRIL 2018

ANSWER ALL QUESTIONS.

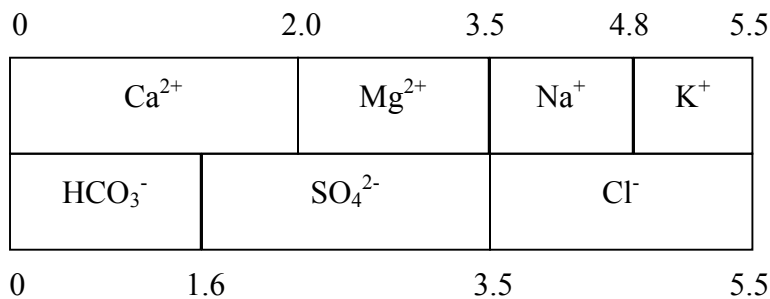
---

#### PART A

1. Explain how suspended solids can affect turbidity of the water bodies. Describe the TWO (2) adverse effects of having much suspended solids in the water.  
(5 marks)
2. Describe TWO (2) main characteristics of each pathogen and indicator microorganisms.  
(4 marks)
3. Rivers can be classified into various classes depending on their Water Quality Index (WQI) values. Describe briefly the differences between Class I, Class III and Class V.  
(6 marks)

#### PART B

1. The following mili-equivalent bar graph was obtained from an analysis of a water sample.



- i. Determine the concentration of each cation and anion in mg/L.
- ii. Calculate the carbonate hardness and non-carbonate hardness in mg/L as CaCO<sub>3</sub>.

(11 marks)

2. The population of Bandar Baru Pulau is as the following below.

YEAR	POPULATION
1970	85,350
1980	104,141
1988	119,062
1995	120,402
2000	137,558

- i. Calculate the population of Bandar Baru Pulau in year 2045.
- ii. Estimate the total water demand in year 2045 ( $WD_{2045}$ ). Assume:

Daily water demand per capita in 2045 = 325 L/d

Water demand for non-domestic uses = 42 MLD

Service factor = 0.99

(Equation:  $r = (P_n / P_0)^{1/m} - 1$ )

(4 marks)