題號： 213　　國立臺灣大學 112 學年度碩士班招生考試試題

科目： 衛生工程

節次： 8

1. 卡爾森指數可用來判定依水體之優養化程度，說明卡爾森指數之定量方式及其使用上之限制。 (15 分)

2. 何謂有效淨正吸水高度(available net positive suction head)，說明其值受那些因素影響。 (15 分)

3. 根據下表之降雨紀錄，計算不同延時下之最大降雨量，並繪製雨量強度-延時曲線圖，雨量強度單位: mm/hr; 延時單位: min。 (20 分)

雨量紀錄

自降雨開始之歷時 (min)	累積降雨量 (mm)	時間段 (min)	時間段內之降雨量 (min)
0	0	0	0
5	7.5	5	7.5
10	14.7	5	7.2
15	21.3	5	6.6
20	33.5	5	12.2
25	40.4	5	6.9
30	52.6	5	12.2
35	66.8	5	14.2
40	79.5	5	12.7
45	85.6	5	6.1
50	92.1	5	6.5
60	96.8	10	4.7
80	104.6	20	7.8
100	111.5	20	6.9
120	115.1	20	3.6

4. Please explain the following terms and their related environmental implications. (20 分)
   (a) Sweep coagulation
   (b) Nitrification biochemical oxygen demand (NBOD)
   (c) Simultaneous nitrification and denitrification (SND)
   (d) Anaerobic digestion

5. Please draw a flow diagram of (rapid sand filter) water treatment plant to produce drinking water from surface waters. (8 分)

6. Explain what **natural organic matter (NOM)** is and why it may be one of the goals of coagulation/flocculation to remove it from drinking water. (7 分)

7. Explain why **alkalinity** decreases in nitrification and increases in denitrification in biological wastewater treatment process (8 分).

8. Describe the **activated sludge-membrane bioreactor (MBR)** process and give an example of its use (7 分).

試題隨卷繳回