

※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1. Briefly describe the following terms.

- (a) Spark. (10%)
- (b) Von Neumann Machine. (10%)
- (c) Petri net. (10%)
- (c) Cloud Computing. (10%)

2. What is the biased single precision IEEE 754 floating point format of 0.9375? What is the purpose to bias the exponent of the floating point numbers? (20%)

3. Is the resource-allocation graph shown below (Figure 1) in a deadlock state? Briefly explain why. (no score if you only answer "yes" or "no").(15%)

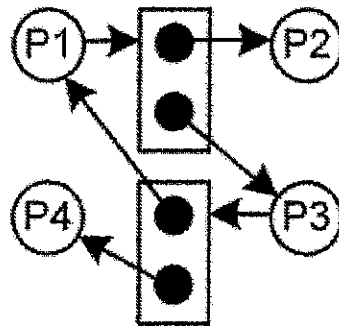


Figure 1: A resource-allocation graph.

- 4. Please write down the three methods that are used by system calls to pass parameters between a running program and the operating system. (15%)
- 5. Assume that you are given a computer with an OS supporting the multi-programming feature. Your Boss asks you to modify the OS to provide time-sharing function. You decide to add a hardware timer to the computer and modify the scheduler of your OS to provide the time-sharing function. Now, your Boss takes away the hardware timer from the computer to reduce cost. Can your OS still support time-sharing by modifying the scheduler? Please briefly explain answer (no score if you only answer "yes" or "no".) (10%)