**CNET320- Test #2**

**January 2018**

1. **Answer four questions from Part A and all questions in Part B.**
2. **Rename the file with using the naming convention *cnet320\_17f\_t2*\_***section#***\_***studentID* **as in** cnet320\_17f\_t2\_005\_300123456.docx
3. **Do not copy from the Internet or other sources. This paper will be checked for originality and marks will be adjusted accordingly.**
4. **This paper must be put into the appropriate dropbox no later than 11:59 PM on Wednesday January 8, 2018. Late papers will be assessed a penalty of 25% per day late.**
5. **This test is out of 80 marks.**

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| **Name** |  |
| **Student Number** |  |
| **Section** |  |

**Part A: Answer all of the following five questions**Virtualization technology is widely deployed in the data center environment. Where is it deployed and what benefits does it bring to the data center environment? How does virtualization technologies compare to cloud based technologies.

1. Compare IaaS, PaaS, and SaaS. What business requirements are each of these aimed to satisfy? What are the advantages and disadvantages of each? What criteria would you use to select on over the other?
2. What is in-row cooling (row-oriented cooling architecture)? What are its advantages over room-oriented cooling architecture (assume a raised-floor in DC)? How can you use both in a hybrid cooling solution in the same DC?
3. What is iSCSI? How it is different from NFS based storage sharing? Does it offer any performance advantage over NFS based storage sharing? Why? How do you manage that hosts see and access their dedicated volumes only?
4. You are operating a colo DC with (2N+1) redundancy. The recent recession in the economy has resulted in you losing one third of your customers. Your DC was designed for room-based cooling, lighting, and power distribution more than a decade ago. You are expected to submit a cost-effective Implementation plan to reduce operating cost. Management is open to additional investment if it brings savings in operations.
   1. What is the impact of losing one third of your customer base on the size of your facilities (physical infrastructure)?
   2. Identify the areas/systems that become sub-optimal (inefficient to run).
   3. What is your action plan to eliminate the inefficiencies you identified? Include investment proposals, if any.

**Part B: Answer all of the following questions. (40 marks as indicated.)**

1. [6 marks] What are two possible types of network design in a modern data center? Which is most often used and why?
2. [5 marks] Briefly outline three types of fire suppression often found in a data center. What are the advantages and disadvantages of each?
3. [4 marks] You have been asked to calculate the cooling requirements for a new data center. Briefly outline the various sources of heat in the data center that you should consider in your calculation.
4. [5 marks] Describe the concept of hot and cold aisles in a data center layout.
5. [2 marks] When laying out the equipment in a data center, what should be placed first and why?
6. [6 marks] Describe the components and process most commonly used to cool a traditional data center.
7. [4 marks] What is tiered storage?
8. [4 marks] What is a Fiber-Optic Cable? What are its advantages over copper cables?
9. [4 marks] When laying out a data center what is a buffer zone and why is it needed?