

EE4217 Test 2011/12 20th Apr 2012 (25 marks)

- 1 a) What is a physical connectivity component? State the key physical connectivity components of a small systems environment. Also, state the key logical components found in all computing environment “hosts”. [8 marks]
- 1 b) What are the features of RAID5? Explain RAID5 operations. State the benefits, drawbacks, performance and data protection of RAID5. [8 marks]
- 1 c) A Telecom company provides mobile wireless services across the region and has about 5000 employees in the region. This company is Hong Kong based and has 7 regional offices across the region. Although the company is doing well financially, they continue to feel competitive pressure. As a result, the company needs to ensure that the IT infrastructure takes advantage of fault tolerant features.

The company uses a number of different applications for communication, accounting, and management. All the applications were hosted on individual servers with disks configured as RAID 0. The company changed the RAID level of their accounting application based on your recommendations 6 months ago. It is now the beginning of a new financial year and the IT department has an increased budget. You are called in to recommend changes to their database environment.

After investigating their database environment closely, it is observed that the data is stored on a 6-disk RAID 0 set. Each disk has an advertised formatted capacity of 2 TB and the total size of their files is 9 TB. The amount of data is likely to change by 30 % over the next 6 months which needs to be addressed. The application performs around 40% write operations, and the remaining 60 % are reads. The average size of a read or write is small, at around 20 KB. [N.B. Each 2 TB drive can hold 1.863 TB data]

- i) Suggest how to restructure their environment if a new 2 TB disk drive costs HK\$1000, assuming the controller can handle all commonly used RAID levels, so the controller will not need to be replaced. [3 marks]
- ii) Propose a RAID solution and calculate the cost of this new solution. [3 marks]
- iii) Justify your choice based on cost, performance, and data availability of this proposed new solution. [3 marks]