UNIVERSITY OF BOLTON

(MERIDIAN CITEC – LONDON)

FACULTY OF ARTS AND MEDIA TECHNOLOGIES

MSC INFORMATION TECHNOLOGY

SEMESTER ONE EXAMINATIONS 2011/12

ENTERPRISE INFASTRUCTURES

MODULE NO: MIT4104 – MAC

Date: Wednesday 18th January 2012 **Time: 6.00 – 8.00pm (2 hours)**

INSTRUCTIONS TO CANDIDATES:

There are 6 questions on this paper.

Answer 4 questions.

All questions carry equal marks.

Arts and Media Technologies
MSC INFORMATION TECHNOLOGY
Semester ONE Examination 2011/2012
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Module No. MIT4104

QUESTION 1

Q1 a) In Japan last year, the 'Advanced Institute for Computational Science' reported that one of their LINUX clusters was now the most powerful computer in the world; boasting 705,024 processors and over a petabyte of memory. Indeed it is often said that parallel UNIX clusters are infinitely scalable. Provide an analysis of parallel clusters that explains how such a colossal machine can be created and managed. (13 marks)

Q1 a) It is increasingly becoming the norm that an operating system hosting a central application will run in a partition as opposed to having it's own dedicated server. Provide an analysis of logically partitioned environments that justifies this trend. (12 marks)

QUESTION 2

Q2 a) Consider the following dogmatic proclamation :

"It is simply not possible that the London stock exchange will ever have to stop trading, even for a minute, due to a computer error"

Assess the accuracy of this statement and provide an analysis of fault tolerant architectures that supports your argument. (22 marks)

Q2 b) Aside from large financial applications such as the stock exchange, in what environments are fault tolerant environments generally found. (3 marks)

QUESTION 3

Q3 a) Two nodes configured as an HA (High Availability) cluster are able to ensure an HA service is provided. Provide an analysis of a two node HA cluster which justifies this proposition. Ensure that you explain in detail the node's configuration and provide an annotation of the events that would occur during a failover. (20 marks)

Q3 b) Evaluate the HA configuration known as "the active/standby model" (5 marks)

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QUESTION 4

Q4 a) Provide a comprehensive analysis of enterprise level storage arrays. Ensure that you explain their functionality, assess the relative merits of using such arrays and critique the various ways in which raw storage is commonly configured. (25 marks)

QUESTION 5

Q5 a) Compare and contrast SAS, NAS, SAN, iSCSI, FC/IP, iFCP, FC-AL and file sharing. Include in your answer an analysis of the communication protocols that underpin these technologies, the relationship between them and their relative merits. (25 marks)

QUESTION 6

Q6 a) With respect to contingency planning, compare the terms gradual and immediate recovery (sometimes referred to as cold and hot standby respectively). In what way are these approaches more advanced than simply ensuring that data is backed up. (5 marks)

Q6 b) Design a simple network backup environment that uses multiple storage pools. Use a diagram to illustrate your design and provide a commentary on the events that will occur during a backup and restore. (15 marks)

Q6 c) In a consolidated backup environment, analyse the relative merits of using an IP network to transfer the data. What are the dangers and how can these be avoided ? (5 marks)

END OF QUESTIONS