**NAIROBI INSTITUTE OF BUSINESS STUDIES**

**DEPARTMENT OF COMPUTER SCIENCES**

**DIPLOMA IN COMPUTER ENGINEERING (ABMA LEVEL 5)**

**END OF TERM EXAMINATION– SEPTEMBER 2014**

**TIME ALLOWED: 3 HOURS**

**ADVANCED NETWORKING TECHNOLOGY**

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| **INSTRUCTIONS:**   1. Answer **ALL the Seven questions.** 2. **Time allowed is 3 hours.** 3. Any examination **irregularity** will lead to **disqualification.** 4. Indicate your **Admission No**. in each answer sheet provided. 5. Cell phones should be switched off during the examination. 6. No reference material of any kind should be carried into the examination room. 7. Marks may be lost for illegibility. 8. All questions carry equal marks. |

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**Question 1**

Your company has been assigned **197.10.172.0** as the IP address for your network. To better administer your network, your manager has instructed you to divide your network into four subnets. The first and second subnets will be for Accounting and Marketing departments respectively, the third will be for Management, and the fourth will be utilized by all other employees who do not fall in the categories mentioned. (Show your working wherever possible)

(a) What class does IP address 197.10.172.0 belong to? (2 marks)

(b) How many bits will you require to meet the required number of subnets? (4 marks)

(c) Calculate the subnet mask you will use to meet network requirement described in the case. (4 marks)

(d) How many usable hosts will be there per sub-network? (4 marks)

(e) Find the subnet IDs and broadcast IDs for the first two subnets. (6 marks)

**Question 2**

Examine the process by which IP addresses are allocated by means of DHCP request. (20 marks)

**Question 3**

(a) Explain the testing of the availability of line based protocols on network ports using a telnet client. (10 marks)

(b) Briefly discuss the security and potential encoding issues in use of telnet. (10 marks)

**Question 4**

(a) Provide a detailed explanation of how web services rely upon the HTTP protocol. (10 marks)

(b) Fully explain the SOAP processing model. (10 marks)

**Question 5**

(a) Analyse how the physical network can be tested for failures. (10 marks)

(b) Discuss the tools used for detecting network intrusion. (10 marks)

**Question 6**

Justify the methodical step-by-step testing of services from basic to the most sophisticated to identify faults. (20 marks)

**Question 7**

Highlight the common file and directory operations using an FTP client to connect to an FTP server. (20 marks)