Pwani UNIVERSITY

UNIVERSITY EXAMINATIONS 2013/2014 ACADEMIC YEAR

1st YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN COMPUTER SCIENCE

COURSE CODE/TITLE: SCS 105 DATA COMMUNICATION TECHNOLOGIES

END OF SEMESTER: II DURATION: 3 HOURS

DAY/TIME: TUESDAY: 2.00 - 5.00PM DATE: 15/04/2014 (LF2)

INSTRUCTIONS:

Attempt Question ONE and ANY OTHER TWO questions.

QUESTION ONE

a) Define the following terms:
   i). Data communication (2 marks)
   ii). Network security (2 marks)
   iii). Routing (2 marks)
   iv). Vulnerability scanner (2 marks)
   v). Bridge (2 marks)

b) Explain the main differences between coaxial cable and fibre optic cable. (4 marks)

c) Explain the following data communication characteristics
   i). Signal type (2 marks)
   ii). Direction of flow (2 marks)

d) Briefly describe three vulnerabilities in data communication process and state the suitable methods of reducing them. (6 marks)

e) Distinguish between the following:
   i). asynchronous and synchronous transmission modes (4 marks)
   ii). IPv4 and IPv6. (4 marks)

f) Describe the following network protocols
   i). TCP (2 marks)
   ii). FTP (2 marks)

g) Outline two factors to consider when choosing a firewall: (2 marks)

h) Give two differences between a client and a server (2 marks)

QUESTION TWO

a) A certain student had connected two hosts A and B directly through their Ethernet Interfaces using a straight through cable. Host A had an IP address 192.168.1.20 with mask ID 255.255.255.240 and host B had an IP address 192.168.1.201 with mask ID 255.255.255.240. Ping attempts between the hosts are unsuccessful. Explain two ways that can be done to provide connectivity between hosts (4 marks)

b) Describe two common routing schemes (4 marks)

c) Explain the procedure for procurement of WAN services (3 marks)

d) Describe four different types of intrusion prevention systems (4 marks)

QUESTION THREE

a) State the functions of a router. (3 mark)

b) Explain the 7 layers of OSI model. (12 marks)

QUESTION FOUR

a) Describe the following terminologies:

i). DNS, (2 marks)

ii). DHCP, (2 marks)

b) Briefly outline three types of servers in client-server computing (3 marks)

c) Explain with the help of diagrams, two common LAN topologies (4 marks)

a) Outline the setting up and administration of one of the following servers: (4 marks)

i). Windows 2008 Server

ii). Mail Server.

iii). IIS 6 Architecture