JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR SCIENCE IN SECURITY AND FORENICS

4thYEAR 1st SEMESTER 2020/2021 ACADEMIC YEAR

MAIN CAMPUS

(SUPPLEMENTARY/SPECIAL EXAMINATION)

COURSE CODE: IIT 3227

COURSE TITLE: COMPUTER SYSTEMS AND NETWORKING LAB

EXAM VENUE: **STREAM:**

DATE: **EXAM SESSION:**

TIME: 2.00 HOURS

INSTRUCTIONS:

1. **Answer Question 1 (Compulsory) and ANY other two questions**
2. **Candidates are advised not to write on the question paper**

3. **Candidates must hand in their answer booklets to the invigilator while in the examination room**

QUESTION ONE [30 MARKS]

a) How many virtual machines can you run on one host? (2marks)

b) Sate Top 3 Economic Reasons for Virtualization? (3marks)

c) Explain the important function that DNS performs in a TCP/IP based Networks (2marks)

d) The IP address provides two pieces of information explain. (2marks)

e) How many octets does a Class A address use to represent the network portion? (1mark)

f) What do you understand by term subnetting? (2marks)

g) Sate the address ranges for Class A, B, and C addresses with their respective subnet masks.

(3marsk)

h) Sate four most common distance-vector routing protocols? (2marks)

i) Briefly explain three services a firewall often provides? (3marks)

j) What is the primary difference between an IDS and an IPS? (2marks)

k) State the three services that IPSec provides (3marks)

l) You have been asked to install a network to give the network users the greatest amount of fault tolerance. Which network topology would you choose and why? (2marks)

m) You need to break up broadcast domains in a Layer 2 switched network. What strategy will you use? (2marks)

n) What do you understand by term Default Gateway (1 mark)

QUESTION TWO [20 MARKS]

a) Define the following terms in relation to DHCP. (3marks)

    i.   Scopes
    ii. Lease
    iii. Reservation

b) When it comes to documenting the network, you need to document all aspects of the infrastructure. This includes the physical hardware; physical structure, protocols, and software used briefly explain 5 critical elements in the physical documentation of a network. **(5marks)**

c) Is it True or False to say that VLANs enable you to create multiple broadcast domains on a single switch? Explain your answer. **(2marks)**

d) Explain what you understand by ARP poisoning   **(4 marks)**

e) Briefly explain at least 5 advantages associated with subnetting as a way of securing a
network infrastructure   **(5marks)**

f) What way would you reduce the risk of attack in file transfer protocol   **(1mark)**

QUESTION THREE [20 MARKS]

a) Distinguish between a cold, warm and hot site.   **(3marks)**

b) Briefly explain 6 advantages to an automated patch update service   **(6marks)**

c) Differentiate between Security patch, Hotfix & Service pack   **(3marks)**

d) Explain two ways in which you can harden an operating system to resist attacks **(4marks)**

e) Explain the functions of the following command   **(4marks)**

      I.   Traceroute
    II.   Nslookup
   III.   Netstat
   IV.   Ifconfig

QUESTION FOUR [20 MARKS]

a) How can virtualization assist in the following areas?   **(6marks)**

- **Server Consolidation and Containment**
- **Infrastructure Provisioning**
- **Business Continuity**
- **Test and Development**
- **Enterprise Desktop**
- **Legacy Application Re-hosting**

b) Briefly explain 5 inherent benefits of virtualization?   **(5marks)**

c) What the difference between a host and guest Operating System?   **(2marks)**

d) What are some of the instances where Virtualization may not work well?   **(5Marks)**

e) What is a Hypervisor?   **(2marks)**

QUESTION FIVE [20 MARKS]

a) You ask your ISP to assign a public IP address for the external inter face of your Windows 2008 server, which is running a proxy server application. In the email message you get that contains the information, the ISP tells you that you have been assigned the IP address 203.15.226.12/24. When you fill out the subnet mask field on the IP configuration dialog box on your system, what subnet mask should you use? Explain your answer.   **(2marks)**

b) As the network administrator, you decide to block port 80, 53, and 21. Which services will be unavailable for network users?   **(3marks)**

c) Explain what you understand by Automatic Private IP Addressing (APIPA)   **(2marks)**

d) Where does a Data Link layer frame have to carry a Network layer packet if the packet is destined for a remote network? Explain your answer.   **(2marks)**

e) What are the most common link-state protocols?   **(2marks)**

f) What the potential drawback of a proxy server   **(2mark)**

g) What are T-lines used for, and what is the maximum speed of T1 and T3?   **(3marks)**

h) Distinguish between the following network design elements and components. **(4marks)**
   - DMZ
   - VLAN