# Tutorial Letter 202/1/2018

## Computer Networks
# COS2626

## Semester 1

## School of Computing

This tutorial letter contains the solution to Assignment 02 for semester 1

BARCODE

Define tomorrow.

UNISA | university of south africa

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To be admitted to the examination, you must submit at least **ONE** assignment before the due date. The due dates for the assignments are as follows:

| SEMESTER 1 | |
|---|---|
| **Assignment 01** | 9$^{th}$ March 2018 |
| **Assignment 02** | 29$^{th}$ March 2018 |
| **Assignment 03** | 13$^{th}$ April 2018 |

# 1    INTRODUCTION

Dear Student,

This tutorial letter, designated COS2626/**202**/1/2018*,* contains the solution to Assignment 02 for Semester 1.

In compiling this solution, we have provided a comprehensive explanation for each question together with the corresponding page references from the seventh edition of the prescribed book.

You should have at this stage received the following study material:
- COS2626/**101**/3/2018 (Start-up letter - Available under Official Study Material on *my*UNISA)
- COS2626/**201**/1/2018 (Solution to Assignment 01 - Available under Additional Resources on *my*UNISA)
- COS2626/**202**/1/2018 (This tutorial letter – Solution to Assignment 02 - Available under Additional Resources on *my*UNISA)

# BEST WISHES FOR A SUCCESSFUL YEAR OF STUDY
# THE LECTURERS
# COS2626

## 2    SOLUTION TO ASSIGNMENT 02: SEMESTER 1

**Question 1**                                                                              **[5]**

Name FIVE factors that cloud computing offers.

| 1.1 | **on-demand service available to the user at any time**✓ | [1] |
|-----|----------------------------------------------------------|-----|
| 1.2 | **elastic services and storage**✓ | [1] |
| 1.3 | **support for multiple platforms**✓ | [1] |
| 1.4 | **resource pooling and consolidation**✓ | [1] |
| 1.5 | **metered service**✓ | [1] |
| Page: 332, Chapter 7 | | |

**Question 2**                                                                              **[3]**

Identify the cloud computing categories in the table below.

| 2.1 | Hardware services are provided virtually, including network infrastructure devices such as virtual servers. | [1] |
|-----|--------------------------------------------------------------------------------------------------------------|-----|
| 2.2 | Developers often require access to multiple platforms during the development process. | [1] |
| 2.3 | Applications are provided through an online user interface and are compatible with a multitude of devices and operating systems. | [1] |

| 2.1 | **IaaS (Infrastructure as a Service)** ✓ |
|-----|------------------------------------------|
| 2.2 | **PaaS (Platform as a Service)** ✓ |
| 2.3 | **SaaS (Software as a Service)** ✓ |
| Pages: 335-336, Chapter 7 | |

**Question 3**                                                                              **[6]**

State whether the following statements regarding network risk management are TRUE or FALSE. If FALSE, correct the statement.

| 3.1 | Hackers may obtain information about your user ID from newsgroups, mailing lists or forms you have filled out on the Web is a risk associated with people. | [2] |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| **False**✓ Hackers may obtain information about your user ID from newsgroups, mailing lists or forms you have filled out on the Web is a risk associated with **Internet access**✓**.** | | |
| Page: 392, Chapter 8 | | |
| 3.2 | Phishing is a social engineering practice in which a person attempts to glean access or authentication information by posing as someone who needs that information. | [1] |
| **True**✓ | | |
| Page: 387, Chapter 8 | | |

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| 3.3 | A NIDS (network-based intrusion detection system) runs on a single computer to alert about attacks to that host | [2] |
|---|---|---|
| **False✓ ,** A **HIDS (host-based intrusion detection system)** ✓ runs on a single computer to alert about attacks to that host | | |
| Page: 403, Chapter 8 | | |
| 3.4 | A stateful firewall is able to inspect each incoming packet to determine whether it belongs to a currently active connection and is, therefore, a legitimate packet. | [1] |
| **True✓** | | |
| Page: 407, Chapter 8 | | |

**Question 4** [8]

| Match each term (4.1 – 4.8) with the correct description (a – h) below: Provide your answer by supplying only the option in the grid provided. | | | | |
|---|---|---|---|---|
| 4.1 | boot sector virus | a | Disguise themselves as legitimate programs or replace part of a legitimate program's code with their destructive code. | [1] |
| 4.2 | network virus | b | A program that runs automatically, without requiring a person to start or stop it. | [1] |
| 4.3 | macro virus | c | A program that claims to do something useful but instead harms the computer or system. | [1] |
| 4.4 | worm | d | Attaches itself to executable files | [1] |
| 4.5 | file-infected virus | e | Programs that run independently and travel between computers and across networks. | [1] |
| 4.6 | Trojan horse | f | The first type of virus to infect data files rather than executable files. | [1] |
| 4.7 | bot | g | Propagate themselves via network protocols, commands, messaging programs and data links. | [1] |
| 4.8 | Stealth virus | h | Commonly spread from external storage devices to hard disks. | [1] |

| 4.1 | **h✓** | Page 415, Chapter 8 |
|---|---|---|
| 4.2 | **g✓** | Page 416, Chapter 8 |
| 4.3 | **f✓** | Page 415, Chapter 8 |
| 4.4 | **e✓** | Page 416, Chapter 8 |
| 4.5 | **d✓** | Page 416, Chapter 8 |
| 4.6 | **c✓** | Page 415, Chapter 8 |
| 4.7 | **b✓** | Page 416, Chapter 8 |
| 4.8 | **a✓** | Page 417, Chapter 8 |

**Question 5** [3]

Given the following descriptions, identify the backup type.

| 5.1 | Backs up everything every time a backup is done. | [1] |
|---|---|---|
| **Full backup**✓ | | |
| Page: 474, Chapter 9 | | |
| 5.2 | Backs up data that has changed since the last backup. | [1] |
| **Incremental backup**✓ | | |
| Page: 474, Chapter 9 | | |
| 5.3 | Backs up data that has changed since the last full backup. | [1] |
| **Differential backup**✓ | | |
| Page: 474, Chapter 9 | | |

**Question 6** [4]

List FOUR ADVANTAGES of virtualization.

| 6.1 | **Efficient use of resources**✓ | [1] |
|---|---|---|
| 6.2 | **Cost and energy savings**✓ | [1] |
| 6.3 | **Fault and threat isolation**✓ | [1] |
| 6.4 | **Simple backups, recovery and replication**✓ | [1] |
| Page: 508, Chapter 10 | | |

**Question 7** [5]

Canyon College wants to offer night classes for business school students, paralegal students and nurses at five remote sites in one state. Their plan is to have professors offer the classes from the main site and to use video conferencing and multimedia options at the remote sites. At the main site, they have a TCP/IP Ethernet network. The remote sites, which are not yet set up, will also have TCP/IP Ethernet networks.

The Canyon College director of information technology is asking you to recommend a reliable WAN option to connect the remote sites to the main campus and to provide a rationale for the options you recommend. You suggest that SONET (Synchronous Optical Network) should be used. Canyon College obviously not very familiar with this WAN technology, poses the following questions.

| 7.1 | Why do you suggest that Canyon College use SONET? | [1] |
|---|---|---|
| SONET is particularly suited **to audio, video and imaging data transmission**✓. | | |
| Page: 579, Chapter 11 | | |
| 7.2 | Why do you suggest that SONET would be a reliable WAN option | [1] |
| **The characteristic of self-healing makes SONET very reliable.**✓ | | |
| Page: 576, Chapter 11 | | |

| 7.3 | Canyon College informs you that they have a very constrained budget. You now explain to them that SONET will definitely not be an option. Which TWO factors make SONET very expensive to implement? | [2] |
|---|---|---|
| **Reliance on fiber-optic cable**✓ | | |
| **Redundancy requirements**✓ | | |
| Page: 579, Chapter 11 | | |
| 7.4 | The data rate of a particular SONET ring is indicated by its _____. | [1] |
| **OC (Optical Carrier)**✓ | | |
| Page: 577, Chapter 11 | | |

## Question 8                                                                                      [3]

The following diagram traces the path of an ADSL (Asymmetric Digital Subscriber Line) connection from a home computer, through the local loop, and to the telecommunication's carrier's switching facility. Identify devices 'A', 'B' and 'C'.
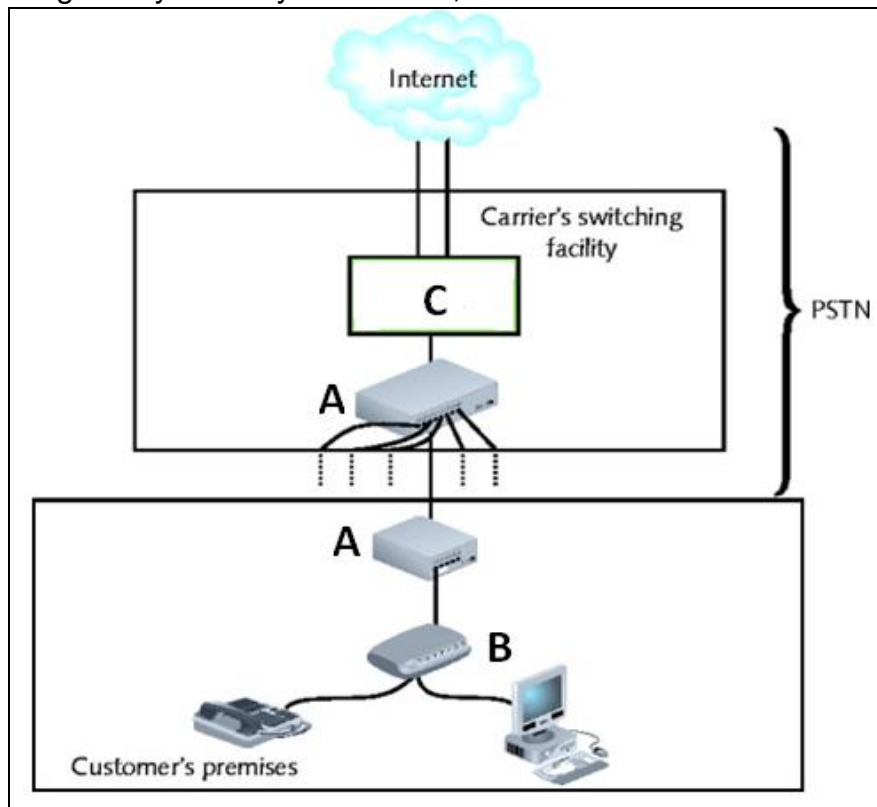


| A | **splitter**✓ | [1] |
|---|---|---|
| B | **DSL modem**✓ | [1] |
| C | **DSLAM (DSL Access Multiplexer)** ✓ | [1] |
| Page: 570, Figure 11-21, Chapter 11 | | |

**Question 9** **[3]**

Identify the following THREE types of changes to existing software.

| 13.1 | A correction, improvement, or enhancement to software. | [1] |
|------|--------------------------------------------------------|-----|
| 13.2 | A major change to a software package that enhances the functionality and features of the software | [1] |
| 13.3 | Reverting to a previous version of software. | [1] |

| 13.1 | **patch** ✓ |
|------|-------------|
| 13.2 | **upgrade** ✓ |
| 13.3 | **rollback OR backleveling OR downgrading** ✓ |
| Page: 613, Chapter 12 | |