UNIVERSITY
OF
JOHANNESBURG

FACULTY OF SCIENCE

ACADEMY OF COMPUTER SCIENCE AND SOFTWARE ENGINEERING	
MODULE	IFM02B2/IFM2B10 INFORMATICS 2B
CAMPUS	AUCKLAND PARK CAMPUS (APK)
EXAM	NOVEMBER EXAM 2020

DATE: 2020-11-02　　　　　　　　　**SESSION:** 12:30 - 15:30

ASSESOR(S):　　　　　　　　　　　R. MALULEKA
　　　　　　　　　　　　　　　　　　　K. LEBEA

INTERNAL MODERATOR:　　　　　　W.S. LEUNG

DURATION: 120 MINUTES　　　　　　**MARKS:** 100

Please read the following instructions carefully:

1. An additional 60 minutes submission time will be allowed.

2. Answer **all** questions.

3. Answer each question in its entirety before moving on to the next.

4. **Submit** your answers in a **single PDF document**.

5. This paper consists of 4 pages, excluding this cover page.

QUESTION 1

You have just been hired for your first job at a pizza restaurant chain that wants to add a delivery service to increase sales. In this job, you are required to analyse the company's business processes and help plan their e-commerce strategy. During your first meeting, your boss wants you to explain how they can design a new Web site to increase sales.

Using the knowledge gained during this module, answer the following questions:

(a) List **two activities** and **two transactions** that employees would regularly do at a pizza restaurant. Clearly state which are transactions.   [4]

(b) What category of e-commerce would this company fall under?   [1]

(c) Name **two revenue strategies** that you feel would best suit the new Web site.   [2]

(d) Name **two forms of economic organisation** that the pizza chain could implement to add the delivery service to their offerings. Briefly discuss how they would implement each option.   [6]

(e) Does pizza consumption follow the law of diminishing returns or the network effect? Justify your answer.   [2]

Total: 15

QUESTION 2

(a) The figure below shows module data marked up using HTML tags. Mark up the data using XML instead.   [8]

```
1  <html>
2    <head>
3      <title>Modules</title>
4    </head>
5    <body>
6      <h1>Modules</h1>
7
8      <h2>Name</h2>
9      <h3>Code</h3>
10     <h4>Description</h4>
11     <h5>TotalStudents</h5>
12
13     <h2>Informatics 2A</h2>
14     <h3>IFM02A2</h3>
15     <h4>Database Design</h4>
16     <h5>220</h5>
17
18     <h2>Informatics 2B</h2>
19     <h3>IFM02B2</h3>
20     <h4>Internet Based Electronic Commerce</h4>
21     <h5>214</h5>
22
23     <h2>Computer Science 3A</h2>
24     <h3>CSC03A3</h3>
25     <h4>Advanced Data Structures and Algorithms</h4>
26     <h5>197</h5>
27   </body>
28 </html>
```

(b) Is **Internet access** a **commodity** good?   [1]

(c) A business spends R250 000 on an advertising campaign to attract customers to its   [6]
new Web site. The advertisement is viewed by 50 000 people, 1000 of whom visit
the Web site. 50 make a purchase, and 30 become repeat shoppers. Calculate the
following metrics:

    i. Acquisition cost
    ii. Conversion rate
    iii. Retention rate

Total: 15

QUESTION 3

(a) Consider the production of a guitar and name **two direct** and **two indirect ma-**   [4]
terials that go into the process.

(b) Give an example of a **tier-one** and a **tier-two** supplier for a guitar manufacturer.   [2]

(c) What type of **auction** do you think is best suited for the sale of a **house**? Motivate   [5]
your answer by discussing the auction type you chose.

(d) Utopia Inc. is planning to commission a new power plant to service the city. The   [4]
power plant would generate 12 gigawatts per annum which would bring in R30 million
of revenue. If the plant costs R100 million to construct and R5 million per year to
maintain, what would be the **ROI** after **ten years**?

Total: 15

QUESTION 4

(a) Why are **ActiveX controls** more dangerous than Java applets?   [4]

(b) Use the **risk management model** to decide on the appropriate action for the   [4]
following threats to cellphones.

    i. Theft
    ii. Unauthorised access - hacking
    iii. Equipment failure
    iv. Malware

(c) Establish a **security policy** for your bedroom.   [6]

(d) Explain how payment processing is different for **credit cards** and **debit cards**.   [6]

Total: 20

QUESTION 5

AutoHome is a software development firm that specialises in home automation systems. They develop and maintain software that connects smart home appliances from different companies such as Google and Amazon devices. AutoHome's software is for automation purposes of creating home routines.

You have been hired as the new system architect, based on your experience from your time spent at a company called If This Then That (IFTTT), the industry leader in home automation. The current version of AutoHome's software does not integrate smart devices well, and the connection is not stable at all. You still have access to IFTTT's highly confidential files describing home automation technology research and this information could stabilize AutoHome's software and retain the current customers as well as bring new customers to the company.

Your employer is aware of the fact that you still have access to IFTTT's files and asks you to download them and fix the issues AutoHome has. By doing this you would be saving the company and there is a salary increase in it for you. If the software is not fixed soon, AutoHome could close down, and more than a thousand employees would lose their jobs.

(a) As an IT professional, would you carry out your boss's instructions? Justify your answer by referring to any professional code of ethics that you have learned during the semester. Include in your discussion if you think IT professionals need to have a code of ethics, and the reasons for your choice.   [10]

Total: 10

QUESTION 6

(a) Name **three** purposes that a MasterPage serve in an ASP.Net Web application.   [3]

(b) Explain what is meant by "Web is a stateless system".   [2]

(c) Cookies are one way of maintaining state in an ASP.Net Web application. Explain the **disadvantages** of using cookies as a method of maintaining state.   [4]

(d) Tabulate **three** differences between Session and Persistent shopping carts.   [6]

(e) Name and discuss **2 levels** in an organisational structure where reporting is important, include which stakeholders they are relevant to.   [4]

(f) Consider the following partial implementation of a login function. The connection to the database is called Exam.dbml, the user object has been created for you using the database table shown below.   [6]

   i. **Implement** the login function used in line 19 and,
   ii. **Fill in the missing lines** of code where the comments are (line 27 and 28).

```
1  CREATE TABLE [dbo].[SystemUser] (
2    [Id]        INT            IDENTITY (1, 3) NOT NULL,
3    [Name]      VARCHAR (50)   NOT NULL,
4    [Surname]   VARCHAR (50)   NOT NULL,
5    [Email]     VARCHAR (50)   NOT NULL,
6    [Password]  VARCHAR (MAX)  NOT NULL,
7    [Active]    BOOL           NOT NULL,
8    PRIMARY KEY CLUSTERED ([Id] ASC)
9  );
10
11 namespace IFM2B10_Exam_2020
12 {
13   public partial class LoginPage : System.Web.UI.Page
14   {
15     Exam_ServiceClient SC = new Exam_ServiceClient();
16
17     protected void login_Click(object sender, EventArgs e)
18     {
19       int UserID = SC.login(Email.Value, Password.Value);
20
21       if (UserID == 0)
22       {
23       error.Visible = true;
24       }
25       else
26       {
27       //create a session called "loggedIn" using the UserID
28       //navigate back to Home.aspx
29       }
30     }
31   }
32 }
```

Total: 25

— End of paper —