ПAMIBIA UПIVERSITY
OF SCIEПCE AПD TECHПOLOGY

FACULTY OF COMPUTING AND INFORMATICS

DEPARTMENT OF INFORMATICS

QUALIFICATION: BACHELOR OF INFORMATICS HONOURS (WEB INFORMATICS)	
QUALIFICATION CODE: 08BIFH	**LEVEL:** 8
COURSE CODE: MAI821S	**COURSE NAME:** MOBILE APPLICATIONS IN INFORMATICS
SESSION: JANUARY 2020	**PAPER:** THEORY
DURATION: 3 HOURS	**MARKS:** 100

SUPPLEMENTARY/SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	MR. GABRIEL NHINDA
MODERATOR:	MR. NABOT NATHANAEL

INSTRUCTIONS
1. Answer ALL the questions.
2. Write clearly and neatly.
3. Number the answers clearly.

PERMISSIBLE MATERIALS

1. Pen, pencil and eraser
2. Ruler

THIS QUESTION MEMORANDUM CONSISTS OF 3 PAGES (Including this front page)

Section A: Short Questions [25 Marks]

1. Which programming languages are used for developing for iOS? [2 Marks]

2. Why has mobile applications development become popular? Provide three (3) reasons. [6 Marks]

3. List five (5) mobile platforms that exist. [5 Marks]

4. Explain why is security an important factor in mobile applications? [2 Marks]

5. Everyone at some time or other gets frustrated when using a mobile device. These effects range from feeling mildly amused to extremely angry. Discuss five (5) reasons why such emotional responses may occur. [10 Marks]

Section B: Descriptive Questions [37 Marks]

1. Elaborate on five (5) types of non-functional requirements. Provide an example for each. [15 Marks]

2. Once the data gathering session has been conducted, interpretation and analysis can begin. Answer the questions that follow regarding data interpretation and analysis.

   a. What is the aim of data interpretations? [2 Marks]

   b. Elaborate of the two (2) task description flavors. Provide an example for each. [6 Marks]

   c. For what purpose are task analysis techniques used for? [2 Marks]

3. Provide six (6) differences between low-fidelity and high-fidelity prototypes. [12 Marks]

Section C: Structured Questions [38 Marks]

1. The android platform is the worlds' most popular mobile platform. Elaborate on the different layers of the Android architecture. [10 Marks]

2. Mobile application have been used to address many problems in society. Short term insurance agents tend to move around a lot and require a mobile device for their business. You are hired as mobile designer and you are required to design a mobile paper prototype application. Consider the fact that the insurance consultants may have different types of mobile phones and visit clients with varying network connectivity. Your prototype should have the following components: new customer leads, security component, in-app calling, new clients.

a. Apply your knowledge of layout design in Android or any other platform learnt to design and draw at least four (4) screens for the application. [10 Marks]

b. Explain how you have made use of the gestalt principles in your design.
[10 Marks]

c. Sensors within mobile devices enhance the mobile application experience. Recommend four (4) mobile sensors for this application. [8 Marks]

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QUALIFICATION CODE: 08BIFH	LEVEL: 8
COURSE CODE: MAI821S	COURSE NAME: MOBILE APPLICATIONS IN INFORMATICS
SESSION: NOVEMBER 2019	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 100

SECOND OPPORTUNITY EXAMINATION MEMORANDUM	
EXAMINER(S)	MR. GABRIEL NHINDA
MODERATOR:	MR. NABOT NATHANAEL

INSTRUCTIONS
1. Answer ALL the questions.   2. Write clearly and neatly.   3. Number the answers clearly.

PERMISSIBLE MATERIALS

1. Pen, pencil and eraser
2. Ruler

THIS QUESTION MEMORANDUM CONSISTS OF 5 PAGES (Including this front page)

Section A [25 Marks]

Question 1: Which programming languages are used for developing for iOS? [2 Marks]

Objective and Swift

Question 2: Why has mobile applications development become popular? Provide three (3) reasons. [6 Marks]

2 marks each

Sample answer

Wider Choice in accomplishing tasks for customising

Business value added to services from cellular operators

Opportunities Created developers can make a reasonable income

Growth of market & availability

Affordable mobile devices

Accessible mobile devices

Question 3: List five (5) mobile platforms that exist. [5 Marks]

1 marks each

Sample answer

Android, Firefox OS, iOS, BlackBerry, Ubuntu for mobile, Symbian

Question 4: Explain why is security an important factor in mobile applications? [2 Marks]

Sample answer

Since mobile devices are mobile, they stand the risk of being stolen or lost. If sensitive data is contained on these devices, it may pose a bigger risk of data loss in larger organisations. Similarly, for individuals, this poses a risk of permanent loss of data.

Question 5: Everyone at some time or other gets frustrated when using a mobile device. These effects range from feeling mildly amused to extremely angry. Discuss five (5) reasons why such emotional responses may occur. [10 Marks]
2 marks for each

Sample answer

When an application doesn't work or crashes

When an application doesn't do what the user wants it to do

When users' expectations are not met

When an application does not provide sufficient information to let the user know what to do

When error messages pop up that are vague or condemning

When the appearance of an interface is too noisy, gimmicky or patronizing

Section B [37 Marks]

Question 1. Elaborate on five (5) types of non-functional requirements. Provide an example for each. [15 Marks]

2 Marks each, 1 mark for each example.

Sample solution

Functional requirements – capture what the product should do.

Data requirements – capture the type, volatility, size/amount and value of the required data.

Environmental requirement or context of use – circumstances in which the interactive product will be expected to operate.

User Requirements – capture the characteristics of the intended user groups.

Usability requirements – usability goals and associated measures for a particular product.

Question 2. Once the data gathering session has been conducted, interpretation and analysis can begin. Answer the questions that follow regarding data interpretation and analysis.

    a. What is the aim of data interpretations? [2 Marks]

    Sample answer

    To begin structuring and recording descriptions of requirements

    b. Elaborate of the two (2) task description flavors. Provide an example for each. [6 Marks]

    3 marks each; 1 mark for naming, 1 mark for elaboration

    Sample answer

    Scenarios

    Informal narrative description. This describes human activities or tasks in a story that allows exploration and discussion of contexts, needs, and requirements.

    Use cases

    Focus on user goals, but emphasize on user-system interaction rather than user's task itself.

    c. For what purpose are task analysis techniques used for? [2 Marks]

    Sample answer

    They help to investigate existing systems and current practices.

Question 3. Provide six (6) differences between low-fidelity and high-fidelity prototypes.

[12 Marks]

*2 marks per difference*

Sample answers

Low-fi	High-fi
Lower development cost	Higher development cost
Proof of concept	Inefficient for proof-of-concept designs
Navigation and flow limitations	Clearly defines navigational scheme
Facilitator driven	User driven
Useful for identifying market requirements	Marketing and sales tool
Useful for requirements gathering.	Not effective for requirements gathering

Section C [38 Marks]

Question 1. The android platform is the worlds' most popular mobile platform. Elaborate on the different layers of the Android architecture. [10 Marks]

2 Marks per layer (1 mark for naming the layer, 1 marks for explanation)
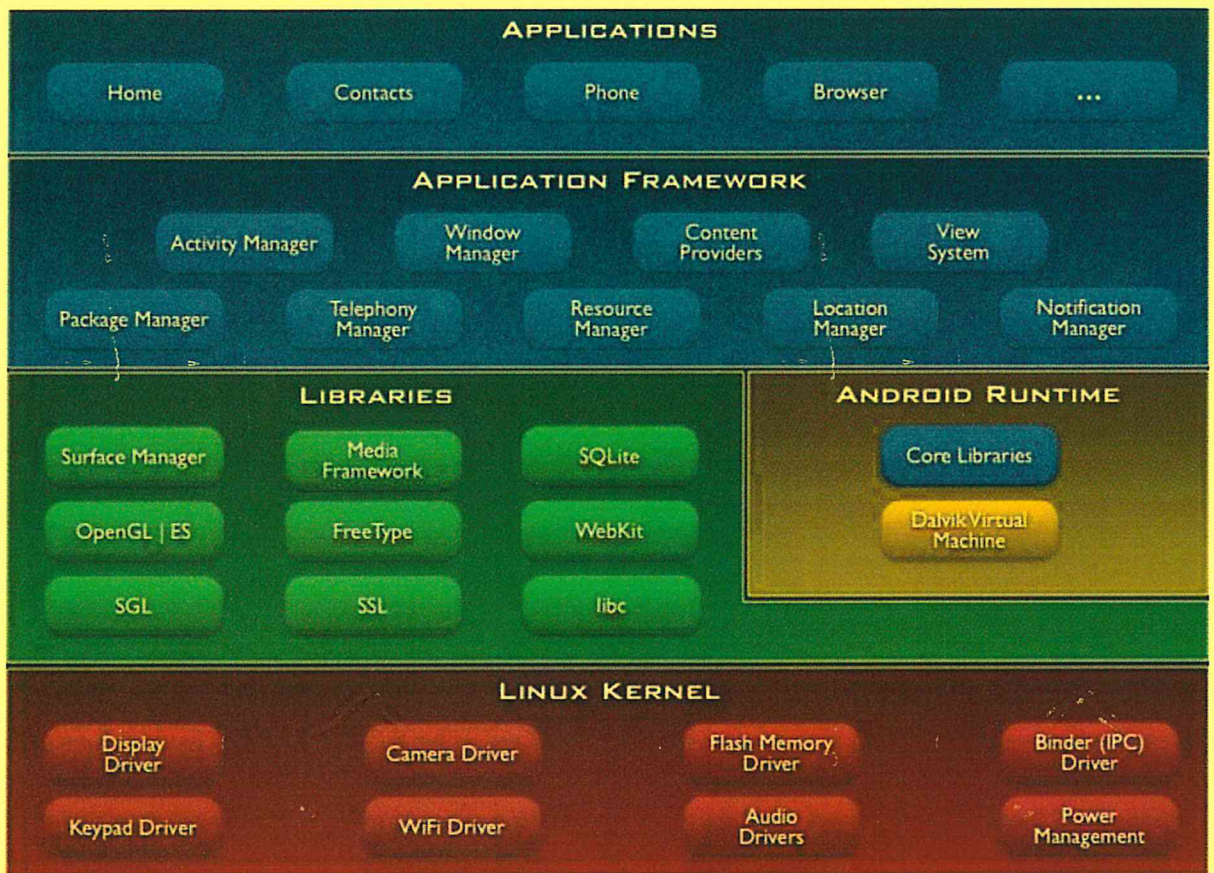
- **Application**: this layer deals with application development. The use of programming languages such as C/ C++, Adobe AIR and mostly the Java Programming Language Also, within this layer all apps have access to the same code libraries underlying hardware interfaces.
- **Application Framework**: In this layer the developers have full access to the same framework APIs used by core applications. The design allows simplified reuse of components in such a way that an application can be published and be used by any other application allowing the user power to replace components if needed
- **Libraries**: Android uses a set of C/C++ libraries used by different components of the Android System. The capacity to accomplish that is usually exposed to the developers through the Android application framework.
- **Android runtime**: an application runtime condition utilized by the Android working framework). Replacing Dalvik, the procedure virtual machine initially utilized by Android. Android Running Time plays out the interpretation of the application's bytecode into local guidelines that are later executed by the gadget's runtime condition.
- **Linux kernel layer**: Whereas the kernel is used as an abstraction layer to provide services like security, memory management, network stack, process management and driver model.

Question 2. Mobile application have been used to address many problems in society. Short term insurance agents tend to move around a lot and require a mobile device for their business. You are hired as mobile designer and you are required to design a mobile paper prototype application. Consider the fact that the insurance consultants may have different types of mobile phones and visit clients with varying network connectivity. Your prototype should have the following components: new customer leads, security component, in-app calling, new clients.

a. Apply your knowledge of layout design in Android or any other platform learnt to design and draw at least four (4) screens for the application. **[10 Marks]**

(2 marks per component incorporate in the design, 2 marks for correct navigation according to chosen platform)

Here students are supposed to make use of use of design principles of the chosen platform.

The navigation structure of the chosen platform.

Similarly how best the student meets the design brief is important.

b. Explain how you have made use of the gestalt principles in your design. **[10 Marks]**

2 marks per gestalt principle

Proximity, Similarity, Continuity, Closure, and Connectedness.

c. Sensors within mobile devices enhance the mobile application experience. Recommend four (4) mobile sensors for this application. **[8 Marks]**

(2 Marks for each)

Sample answer

Accelerometer.

Gyroscope.

Magnetometer.

GPS.

Proximity Sensor.

Ambient Light Sensor.

Microphone