

**UCSC****University of Colombo, Sri Lanka***University of Colombo School of Computing***DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY
(EXTERNAL)**Academic Year 2025 — 3rd Year Examination — Semester 6**IT6306 — Mobile Application Development***Structured Question Paper*
(2 Hours)**To be completed by the candidate****Index Number**

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Important Instructions

- The duration of the paper is **2 hours**.
- The medium of instructions and questions is English. Students should answer in the medium of English language only.
- This paper has **4 questions** on **11 pages**. Answer **all** questions.
- All questions carry **equal** marks.
- Write your answers **only on the space provided** on this question paper.
- Do not tear off any part of this question paper. Under no circumstances may this paper (or any part of this paper), used or unused, be removed from the Examination Hall by a candidate.
- Note that questions appear on both sides of the paper. If a page or part of a page is not printed, please inform the supervisor/invigilator immediately.
- Any electronic device capable of storing and retrieving text, including electronic dictionaries, smartwatches, and mobile phones, is not allowed.
- Calculators are **not allowed**.
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**To be completed by
the examiners**

1	
2	
3	
4	
Total	

01.

(25 marks)

(a) Briefly explain the mobile strategy rule of thumb “Do not convert, create”

(4 marks)

(b) Briefly explain how a Web framework provides **two (02)** advantages from Android’s Java API framework for developing an application that has a shopping cart for customers.

(4 marks)

(c) Order the following layers of the mobile ecosystem keeping the **Applications** layer at the top.
{Applications, Application Frameworks, Devices, Networks, Operating Systems, Operators.}

(5 marks)

- (d) Write a brief note on one mobile operating system that you know of, covering **four (04)** points : its name, manufacturer, source type(open/proprietary) and usage.

(4 marks)

- (e) Briefly describe the following parts of Android platform architecture.

i) ART

ii) HAL

iii) Kernel

iv) Java API framework

(2x4 = 8 marks)

02.

(25 marks)

(a) Name **five (05)** features of Figma that promote designer productivity.

(5 marks)

(b) Briefly explain **three (03)** aspects of **Context** element in mobile design.

(6 marks)

(c) What is meant by a “best practice” in mobile design? Why might a designer avoid adhering to a particular best practice in their mobile design?

(6 marks)

- (d) Write a relationship that allows one to calculate the PPI of a given mobile screen, provided **two(02)** physical parameters of the same screen hardware.

(5 marks)

- (e) Briefly explain the “**message**” element in mobile design.

(3 marks)

03.

(25 marks)

- (a) Prototyping is an effective technique for initiating the design of mobile applications. Break down the prototyping process to simpler steps, providing a short description for each.

(4 marks)

- (b) Explain **ANR** in Android and list **three (03)** causes for **ANR** problems in Android applications.

(5 marks)

- (c) Draw **two(02)** transition diagrams for an Android Service life cycle taking bounded and unbounded service with important **callbacks** marked and named. You may draw the diagrams parallel to each other.
(16 marks)

04.

(25 marks)

- (a) Write short notes to the following questions related to Room library and accompanying Android components. **Note** : You must write enough points to get the allocated marks for each sub-question

(i) @ColumnInfo annotation

(2 marks)

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(ii) @Entity annotation

(2 marks)

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(iii) @PrimaryKey annotation

(2 marks)

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(iv) @NotNull annotation

(2 marks)

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(v) Room Library, Database component and Dao component

(2x3=6 marks)

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(vi) LiveData

(4 marks)

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(b) Enterprise mobile apps are released from specific MDM/MAM services. In contrast, write **three (03)** strategies used to release an Android consumer mobile application to users.

(3 marks)

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- (c) Briefly explain the **versionCode** parameter in the Gradle build file. Include **four (04) points** in your answer.

(4 marks)
