THE UNIVERSITY OF SYDNEY

Room Number _____

Student Number |__|__|__|__|__|__|__|__|__|__|

ANONYMOUSLY MARKED

(Please do not write your name on this exam paper)

MODEL EXAMINATION

Semester 2 - Main, 2020

COMP5216 Mobile Computing

EXAM WRITING TIME: 3 hours

EXAM CONDITIONS:
This is a short-release take-home exam.

INSTRUCTIONS
Please answer A answer booklet.

You can insert ha f the word document or use drawing tools of MS Word for diagr

After answering ALL questions, convert this word do ad it to "Final Exam – Main" assignment at Canvas site " 6".

Please tick the box to confirm that your examination paper is complete. ☐

For Examiner Use Only

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Question 1

1.1 List an advantage of using Network Location instead of GPS location and provide an example use case for the given advantage. **[4 marks]**

1.2 Many users have regular device charging patterns that can be easily captured with modern machine learning capabilities. If your app is able to predict the next charging time, explain **two** strategies that use this knowledge to reduce the energy consumption of your app. **[4 marks]**

Question 2

You have been asked to design an app that collects Motion Sensor and Body Sensor data from a smartphone and upload to a cloud service for fitness analytics. The app should start automatically across reboots or any user actions. Data is collected in a sample rate of few seconds. *Note: This is a design question only. You don't have to write code for this.*

2.1 Describe technical approach that you plan to follow including the basic components of Android you need to develop this app (You may use a block diagram to explain your design) **[6 marks]**

2.2 If the data upload process is not real time, describe two methods you can use to reduce r **marks]**

2.3 If the data ribe two methods you can use to ergy) ? **[4 marks]**

Question 3

Design an Android mobile app that records by the user throughout the day and display it to the user whenever the user invokes the app with historical statistics. *Note: This is a design question only. You don't have to write code for this.*

3.1 Describe two methods of obtaining the distance travelled by the user and explain why one method will not be sufficient to record distance throughout the day. **[6 marks]**

3.2 Propose an energy efficient algorithm to collaboratively utilize the above two methods of distance calculation. (Note: Specify if you have made any assumptions on the default settings of the smartphone). **[6 marks]**

3.3 Name the android permissions required for the functionality of the app. **[2 marks]**

Question 4

You started a new company to sell small electronic items online. Smartphones can be used in numerous ways to enhance the efficiency of every business. Design an innovative mobile app to improve your productivity of your new

business. Note: Innovation, feasibility, and usability will be taken into account for marking.

4.1 Briefly explain the primary goal of your app. **[2 marks]**

4.2 Justify the innovation of your solution (competitive advantage) **[6 marks]**

4.3 Explain the functionality of your app (how your mobile app works) with storyboards or a block diagram. **[8 marks]**

4.4 Explain your technical approach in developing the above proposed app as an Android mobile app. **[8 marks]**

END OF EXAMINATION