UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

BACHELOR OF SCIENCE HONOURS IN COMPUTER SCIENCE
BACHELOR OF SCIENCE HONOURS IN SOFTWARE ENGINEERING
BACHELOR OF SCIENCE HONOURS IN INFORMATION SYSTEMS
BACHELOR OF SCIENCE IN COMPUTER SCIENCE
BACHELOR OF SCIENCE IN INFORMATION SYSTEMS

Academic Year 2020/2021 – Second Year Examination – Semester I – 2021

SCS3213/IS3112– Game Development

TWO (2) HOURS

To be completed by the candidate								
Examination Index No:								

Important Instructions to candidates:

1. Students should answer in the medium of **English language only** using the space provided in this question paper.
2. Note that questions appear on both sides of the paper. If a page or a part of this question paper is not printed, please inform the supervisor immediately.
3. Write your index number **CLEARLY** on each and every page of this Question paper.
4. This paper consists of **4** questions in 13 pages (including the Cover Page).
5. Answer **ALL** questions.
6. Programmable Calculators and any electronic device capable of storing and retrieving text including electronic dictionaries, smart watches and mobile phones are **not allowed**.
7. **Non-Programmable** calculators are **not allowed.**
8. Do not tear off any part of this answer book. Under no circumstances may this book, used or unused, be removed from the Examination Hall by a candidate.

For Examiner's use only	
Question No	**Marks**
1	
2	
3	
4	
Total	

Index No.								

Q1.	A.	Briefly explain the **differences** between *Serious Games, Casual Games* and *Hardcore Games*. **(06 marks)**

ANSWER BOX

Index No.								

Q1. B. Briefly explain the benefits of using *scene-graph* data structure in interactive 3D graphics applications.

(05 marks)

ANSWER BOX

Q1. C. Draw a *scene-graph* for a simplified motorcycle. Sketch the model and show the correspondence between the *scene-graph* nodes and your model. State any assumptions made.

(08 marks)

ANSWER BOX

Index No.								

Q1.	D.	List **four** (4) types of *layouts* used in game design. Use appropriate illustrations in your answer. **(06 marks)**

ANSWER BOX

Index No.								

Q2.	A.	Briefly describe **three** (03) differences between *Web AR* and *App-based-AR* technology. **(06 marks)**
		ANSWER BOX

Index No.								

Q2. B. Briefly explain how you can use *MinMax Algorithm* can decide next moves when the *full tree* is impossible (e.g. chess).

(04 marks)

ANSWER BOX

Index No.								

Q2. C. What is *sense-think-act* cycle in programming agents, in a game?

(05 marks)

ANSWER BOX

Q2. D. Briefly describe about *Flocking* in related to movement

(05 marks)

ANSWER BOX

Q2. E. Briefly explain how you can use *AirSim* plugin with *Unreal* Game Engine for autonomous drone simulations?

(05 marks)

ANSWER BOX

Index No.								

Q3. A. Name **three** (03) main Windows in *Unity Engine* Interface.

(03 marks)

ANSWER BOX

Q3. B. What is the difference between *Perspective Camera* and *Orthographic Camera* in *Three.js*?

(06 marks)

ANSWER BOX

Index No.								

Q3.	C.	*Unity* and *Unreal* are two of the most popular *Game Engines*. Name **four** (4) other Game Engines. **(04 marks)**
		ANSWER BOX

Q3.	D.	Games are multimedia applications by nature and digital assets' source data must be created and manipulated by artists using digital content creation (DCC) applications. List **four** (4) DCC tools and their use. **(06 marks)**
		ANSWER BOX

Index No.								

Q3. E. Briefly explain **four** (4) different interaction patterns that can be used in Game Design. Use an appropriate illustration in your answer.

(06 marks)

ANSWER BOX

Q4. A. State **three** (3) coordinate systems used in Computer Graphics applications.

(03 marks)

ANSWER BOX

Index No.								

Q4. B. Briefly explain what is meant by *Gimbal Lock*.

(04 marks)

ANSWER BOX

Q4. C. Briefly explain what is meant by *Fragment Shader*.

[05 Marks]

ANSWER BOX

Index No.								

Q4. D. State **two** (02) *Fragment Shader* operations.

[04 Marks]

ANSWER BOX

Q4. E. Explain what is meant by *Rasterization* using the *OpenGL* pipeline.

(04 marks)

ANSWER BOX

Index No.								

Q4.	F.	*Leap Motion* controller is one of the widely used in the game industry. Briefly explain the difference between *Leap Motion* controller and *Orbbec* device. **(05 marks)**
		ANSWER BOX

*****