CHUKA UNIVERSITY

UNIVERSITY EXAMINATIONS

FOURTH YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN APPLIED COMPUTER SCIENCE

ACSC 478: COMPUTER ANIMATION

STREAMS: BSC (APPLIED COMP SCI.) Y4S1 **TIME: 2 HOURS**

DAY/DATE: WEDNESDAY 16/04/2025 **2.30 P.M. – 4.30 P.M.**

INSTRUCTIONS:

- Answer question **ONE** and **TWO** other questions
- Sketch maps and diagrams may be used whenever they help to illustrate your answer
- Do not write anything on the question paper
- This is a **closed book exam**, No reference materials are allowed in the examination room
- There will be **No** use of mobile phones or any other unauthorized materials
- Write your answers legibly and use your time wisely

SECTION A-COMPULSORY

QUESTION ONE (30 MARKS)

a) Briefly explain any four traditional animation techniques. [4 marks]

b) Define or explain the following terms: [10 marks]

i) Computer animation.

ii) Inbetweening.

iii) Persistence of vision.

iv) Sampling rate.

v) Rendering

c) Is there any difference between computer graphics and image processing? Explain [4 marks]

d) Explain hand drawn animation with rotoscoping [4 marks]

e) Explain any three devices used in computer animation. [6 marks]

f) Explain what RGB is. [2 marks]

SECTION B-ANSWER ANY TWO QUESTIONS

QUESTION TWO (20 MARKS)

a) What is character animation? [2 marks]

b) Explain the need for media asset management during the animation process. [3 marks]

c) Explain how the concept of ray tracing is applied during animation. [3 marks]

d) Explain the following types of animation controls: [6 marks]

i) Explicitly declared control

ii) Live action / analyzing control

iii) Facial animation control

e) Describe how you would use blender (or similar animation system) to create a particle system representing blue bubbles emerging through a small hole in a wall. Mention at least 3 parameters that you would set. [6 marks]

QUESTION THREE (20 MARKS)

a) Compare and contrast between character animation and effects animation. [4 marks]

b) Using physics based models, explain forward dynamics and inverse dynamics. [4 marks]

c) Write the important applications of computer animation. [6 marks]

d) Using a demonstration, explain how you can design an animation in blender under the following subheadings: Preliminary story, Story board, Detailed story, Key Frames, Test shot, Pencil test, Inbetweening, Inking, Coloring. [6 marks]

To be illustrated on paper

QUESTION FOUR (20 MARKS)

a) Creating a 3D computer animation undergoes three major processes; Pre-production, production and post-productions, briefly explain at least three activities in in each of these processes [9 marks]

b) Explain using illustrations and diagrams the following animation concepts:

i) Key framing. [2 marks]

ii) Interpolation. [3 marks]

iii) Kinematics (Forward and Inverse). [3 marks]

iv) Motion Capture. [3 marks]

QUESTION FIVE (20 MARKS)

a) Describe two weaknesses of interpolation method in Animation. [4 marks]

b) Explain the difference between stop motion animation and cut out animation. [4 marks]

c) Using a suitable demonstration, explain how static photographs can be converted into moving Images and create a realistic scene in an animated movie. [6 marks]

d) One method of creating an animation is to write a program in a standard programming language and call graphics library functions as needed to create the animation. Describe three other methods of creating animations, giving an advantage and a disadvantage of each approach. [6 marks]
