

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

FOURTH YEAR EXAMINATION FOR THE AWARD OF
BACHELOR OF SCIENCE APPLIED COMPUTER SCIENCE
ACMP 445: COMPUTER ANIMATION

STREAMS: BSC (APPLIED COMP SCI.)

Y4S1

TIME: 2 HOURS

DAY/DATE:.....

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) Define or explain the following terms, using relevant illustrations: **[10 marks]**
 - i) Computer animation.
 - ii) Inbetweening.
 - iii) Frame.
 - iv) Sampling rate.
 - v) Rendering
- b) Is there any difference between computer graphics and image processing? Explain **[4 marks]**
- c) Describe the terms persistence and resolution in reference to CRT. **[4 marks]**
- d) Explain any three devices used in computer animation. **[6 marks]**
- e) Define the following: **[4 marks]**
 - i) Point Clipping
 - ii) Line clipping
- f) Explain the RGB concept, in representing images on a 3-D screen. **[2 marks]**

SECTION B-ANSWER ANY TWO QUESTIONS

QUESTION TWO (20 MARKS)

- a) Briefly explain Cel Animation **[2 marks]**
- b) Explain three advantages of introducing dynamics into an animation control **[6 marks]**
- c) Explain using illustrations and diagrams the following animation concepts:
 - i) Key framing. **[3 marks]**
 - ii) Interpolation. **[3 marks]**
 - iii) Kinematics (Forward and Inverse). **[3 marks]**
 - iv) Motion Capture. **[3 marks]**

QUESTION THREE (20 MARKS)

- a) Describe the process of Animation **[8 marks]**
- b) One principle of traditional animation is called “squash and stretch.” Name and briefly explain three more principles. **[6 marks]**
- c) Explain the concept of ray tracing and how it can be applied in rendering 3-D scenes **[6 marks]**

QUESTION FOUR (20 MARKS)

- a) Define the term Morphing with an example **[2 marks]**
- b) Write the important applications of computer animation. **[6 marks]**
- c) Describe a problem with using linear interpolation between key frames. **[6 marks]**
- d) Given that a ball is falling from a height $h=100$ generate the animation sequence corresponding to the motion of this ball. Equation of motion is given as: $y = h - 0.5g t^2$. Plot a simple graph to show the path taken by this ball. **[6 marks]**

QUESTION FIVE (20 MARKS)

- a) Write the important applications of computer animation. **[6 marks]**
- b) Define animation sequences and describe the various steps involved in animation sequence. **[6 marks]**
- c) Define the following with an example: **[8 marks]**
- Morphing.
 - Types of animation system.