LAIKIPIA UNIVERSITY

UNIVERSITY EXAMINATIONS

FIRST SEMESTER 2025/2026 ACADEMIC YEAR

SECOND YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN INFORMATION COMMUNICATION AND TECHNOLOGY

BICT 215: COMPUTER AIDED DESIGN

STREAM: R ***TIME: 2 HRS***

DAY: MONDAY [8.30 – 10.30 A.M] ***DATE: 02/02/2026***

THIS QUESTION PAPER CONSISTS OF FOUR (4) PAGES

PLEASE DO NOT OPEN UNTIL THE INVIGILATOR SAYS SO.

INSTRUCTIONS: Answer Questions One and any other Two questions

QUESTION ONE (30 MARKS)

a) The CAD (Computer-Aided Design) industry is continuously evolving, driven by technological innovations and the increasing complexity of design requirements across industries. From architecture to manufacturing, CAD design software is at the forefront of this evolution, enabling professionals to push the boundaries of what's possible. As we look toward 2025 and beyond, new trends are reshaping how designers, engineers, and architects utilize CAD tools.

Required:

i). Define what is meant by the term CAD **[2 Marks]**

ii). Asses the advantages of CAD design software that has made it to be at the forefront of technological innovations and evolution, enabling professionals to push the boundaries of what's possible in the design industry. **[4 Marks]**

iii). Argue the key technological innovations that are driving the software and other tools driving Computer Aided Design in the industry. **[4 Marks]**

b) The word "Cartesian" comes from the philosopher Descartes, who came up with the idea. One day Descartes was staring at a fly on the floor. It occurred to him that he could describe the fly's location floor by noting its distance from two of the walls. Using coordinates to specify locations can be a challenge in AutoCAD. It helps to take our time to understand the underlying concepts. AutoCAD uses two primary coordinate systems. Using coordinates to specify locations can be a challenge in AutoCAD.

i. Name the coordinate systems used in AutoCAD and give the characteristics of each. **[6 Marks]**

ii. Explain why Using coordinates to specify locations can be a challenge in AutoCAD. **[4 Marks]**

c) Think of the most recent time you were impressed by a great product—be it a new sleek phone, a futuristic car, or a beautifully crafted piece of furniture. Behind the product is a powerful and sophisticated tool that helps in converting abstract ideas into tangible products: 3D CAD modelling design services.

i. Predict the future of 3D CAD modelling in industrial designs. **[4 Marks]**

ii. Discuss THREE benefits that a firm might realize by adopting CAD software in their drafting process. **[6 Marks]**

QUESTION TWO (20 MARKS)

a) Describe the concept of layers as used in AutoCAD. **[5 Marks]**

b) The AutoCAD or computer aided design machine has been a great help to engineers and also for several architectures that are finding it impossible to deal with drawings and plans of the machine without this system.

From this narration, name five basic needs for CAD in engineering and architects that aid them in drawings and plans. **[5 Marks]**

c) Using a diagram explain the role of geometric modelling in a CAD system. **[6 Marks]**

d) Describe what is meant by Geometric modelling in a CAD system and what is involved in the process. **[4 Marks]**

QUESTION THREE (20 MARKS)

a) **Describe the functions of the following software tools that are found in CAD software:**

i). Rendering and Visualization **[4 marks]**

ii). Simulation: **[4 marks]**

iii). Parametric and Associative Design:

[4 marks]

b) The history of hardware devices used in Computer-Aided Design (CAD) applications has evolved dramatically from expensive, specialized equipment to powerful, affordable personal computers and mobile devices. Early CAD systems were largely experimental, expensive, and ran on large **mainframe computers** accessible only to major corporations and research institutions.

i. Explain why the hardware devices used in Computer-Aided Design (CAD) applications have evolved dramatically as given in the narrative. **[4 Marks]**

ii. Compare the early CAD systems with the current CAD Systems in terms of hardware devices used in each. **[4 marks]**

QUESTION FOUR (20 MARKS)

a) Name and Explain three types of 3-D models that are normally used in computer aided design. **[6 Marks]**

b) Describe the procedures of drawing a rectangular in sketch up. **[4 Marks]**

c) Discuss **THREE** benefits of a ribbon in AutoCAD interface **[6 Marks]**

d) Write the AutoCAD steps to draw a chair. **[4 Marks]**

QUESTION FIVE (20 MARKS)

a) After you have created some objects in AutoCAD objects that make up a technical drawing, such as lines or circle or a combination of both, they are sometimes just not the way you would like them, they may need to be rotated, moved, copied, scaled larger or smaller, etc, to do these things you need to have a good basic understanding of some of the AutoCAD editing commands. Identify and explain any five such editing commands **(10 Marks)**

b) Discuss the concept of layers as used in AutoCAD **(5 Marks)**

c) Using an example in each case, outline the steps of Adding polylines in AutoCAD **(5 Marks)**