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University Examinations 2012/2013

SECOND YEAR, FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR
OF SCIENCE IN INFORMATION TECHNOLOGY AND COMPUTER TECHNOLOGY

BIT 2111: COMPUTER AIDED ART AND DESIGN

DATE: AUGUST 2013

TIME: 2 HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions

QUESTION ONE – 30 MARKS

- Determine and briefly explain any four primitives (objects) that can be used to generate models in CAD software. (8 Marks)
- Explain the following concepts as used in CAD. (8 Marks)
 - Layer
 - Block
 - Vector graphics
 - Raster graphics
- Using relevant examples, explain three methods used to enter coordinate values in a CAD system. (8 Marks)
- Explain three modes that can be used to interact with a CAD system. (6 Marks)

QUESTION TWO – 20 MARKS

- Explain the design process using an appropriate diagram. (15 Marks)
- State the characteristics of a good algorithm. (5 Marks)

QUESTION THREE – 20 MARKS

- In order to come up with a design model, a CAD system had to perform some geometric transformations to assemble the various primitives forming the model. Name and state the characteristics of any three geometric transformation used in CAD systems. (9 Marks)
- State any five requirements of a data structure that can be used to support interactive modeling system. (5 Marks)
- Discuss the three coordinate systems used in CAD when designing a model. (6 Marks)

QUESTION FOUR – 20 MARKS

- a. Explain two ways that can be used to represent arrays in AutoCAD. (4 Marks)
- b. Explain the following commands as applied in AutoCAD. (4 Marks)
- Offset
 - Chamfer
 - Fillet
 - Trim
- c. Differentiate between polyline and polygon. (4 Marks)
- d. If the transformation matrix [Tm] is applied on the object with the following coordinate points A(1,1), B(5,1), C(5,4) and D(1,4) where $[Tm] = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 5 \\ 0 & 0 & 1 \end{pmatrix}$
- Determine the coordinate points of the transformed object (4 Marks)
 - Sketch the object and its image on a 2D coordinate system. (3 Marks)
 - State the geometric transformation represented by the above matrix. (1 Mark)

QUESTION FIVE – 20 MARKS

a. Explain the following commands as used in AutoCAD. (4 Marks)

- i. Dimaligned
- ii. DimAngular
- iii. Dimlinear
- iv. Dimordinate

b. By using the line command write the command line statements that will generate the figure below. Take the first and second coordinate points to be (1,1) and (4.1,1) respectively. The statements to generate the annotations are not required. (16 Marks)

