



The University of Fiji

SCHOOL OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE / INFORMATION TECHNOLOGY

FINAL EXAMINATION SEMESTER 2, 2015

Three Dimensional Designs

ITC326

Time Allowed: Three hours (3 hours)

(An extra ten minutes is allowed for reading this paper)

INSTRUCTIONS

- 1.0 Write **all** your answers in the **Answer Book** provided.
 - 2.0 There are seven (7) pages of questions in this Question Booklet (excluding the Cover Page)
 - 3.0 Write your **Student Identification Number** on the front page of the **Answer Book**.
 - 4.0 If you use extra sheets of paper, be sure to show clearly the question number(s) being answered and to tie each sheet securely in your Answer Book at the appropriate place.
 - 5.0 There are **two** sections in this paper, **Section A** consists of 10 multiple choice and is worth 10 marks, **Section B** consists of open ended questions and is worth 90 marks.
Answer all the questions in the paper.
 - 6.0 **Programmable** calculators are not allowed.
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Section A.

Multiple Choice Questions

[10 marks]

1. Under Hierarchy and Combinations selection mask, ____ selection mode ensures that when you select items they are selected at their parent node.
 - A. Select by hierarchy : leaf
 - B. Select by hierarchy
 - C. Select by hierarchy : root
 - D. Select by hierarchy : template
 2. The primary tool for working with nonlinear animation is ____.
 - A. Visor
 - B. Hypergraph
 - C. Graph Editor
 - D. Trax Editor
 3. If you were to display the scene with Panels > Layouts > Four Panes, and you are working on the top view, ____ panel will show the ball moving after playing the animation.
 - A. Persp
 - B. Top
 - C. Side
 - D. Front
 4. By default, you must click at least ____ points to create a curve with the CV Curve Tool.
 - A. Four
 - B. Six
 - C. Eight
 - D. Two
 5. ____ ensures that only the object you want to work on is affected by your transformation.
 - A. Volume Based Falloff
 - B. Surface based Falloff
 - C. Weight based Falloff
 - D. Transparent based Falloff
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6. Just like subdivision surfaces, _____ also lets you extrude specific areas and create additional detail in your surfaces.
- A. polygonal surfaces
 - B. NURBS surface
 - C. volume Primitive
 - D. plain images
7. Maya keeps track of the options, attribute settings, and transformations made to an object via its _____ history.
- A. object
 - B. outliner
 - C. construction
 - D. visor
8. Inverse Kinematics allows you to control the joint rotations in a skeleton using a/an ____.
- A. ik solver
 - B. ikSCsolver
 - C. ik single chain solver
 - D. ikhandale
9. A _____ is a collection of attributes that define color and other surface characteristics of the plane it is assigned to.
- A. Components
 - B. History
 - C. Colour palettes
 - D. Shader
10. In automatic Mapping, UV projection is produced from three planar directions simultaneously. This projection type is referred to as a _____.
- A. triplanar projection
 - B. triple projection
 - C. automatic projection
 - D. threeplanar projection
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Section B**[90 marks]****Question 1****[10 marks]**

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- A. What is the default frame rate in maya? [0.5 mark]
- B. What happens to the menu bar when a user toggles through the menu set? [0.5 mark]
- C. What is camera dolly? [1 mark]
- D. What is the purpose of a graph editor? [0.5 mark]
- E. Explain the process of batch rendering. [2 marks]
- F. What is the difference between a look at point and an eye point? [1 mark]
- G. Explain four objects where path animation is used for easy animation. [2 marks]
- H. What is a pivot point? Write the process of changing the pivot position of an object in Maya? [2 marks]
- I. What does a hypergraph window exhibit? [0.5mark]

Question 2**[10 marks]**

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- A. Explain the drawback of using a lot of CVs? [1 mark]
- B. What is the default shading mode in maya? Explain how the objects appear in this mode. [1 mark]
- C. Differentiate between the area of low falloff and the area of high falloff. Give the colour coding which differentiate both. [1.5marks]
- D. Explain and give another name for 3D perception? [1.5marks]
- E. What is the advantage of using an outliner editor? [1 mark]
- F. What is most simple technique for creating NURBS surfaces? [0.5 mark]
- G. What is the function of a paint selection tool? [1 mark]
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- H. In the Ocean Attributes section following attributes will be found. Explain what each of these attributes control and discuss what happens when you increase the value of both these attributes. [2 marks]

Num Frequencies: 12

Wave Length Max: 40

- I. Write the steps, on how to enter into vertex editing mode. [0.5 mark]

Question 3 [10 marks]

- A. What is the purpose of the snap to grids feature in maya? [1 mark]
- B. What are tangent handles? Explain the purpose of breaking the tangents after selecting the key. [2 marks]
- C. What is a skeleton in maya? [0.5 mark]
- D. Explain skinning/ binding in Maya. [1 mark]
- E. Explain the purpose on an ik handle tool and a control object. [2 marks]
- F. Before you constrain the IK handle to the control object, you need to freeze the transformations for the control object. Explain what you mean by Freeze Transformations. [1 mark]
- G. What is the difference between object selection mode and component selection mode? [2 marks]
- H. What is the use of soft modification tool? [0.5 mark]

Question 4 [10 marks]

- A. Name four types of lights used in maya apart from spot light and directional light. [2 marks]
- B. Write the process of inserting "CV" to a curve. [1 mark]
- C. Write the steps to insert edge in maya. [1 mark]
- D. What is 3D printing? Explain how the 3D printer works? [3 marks]
- E. Write the process of sewing shell edges together in the UV texture editor. [1 mark]
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F. To extrude an object, name the mode into which you will have to enter? [0.5 mark]

G. Explain the 3 types of fluid effects. [1.5marks]

Question 5 [20 marks]

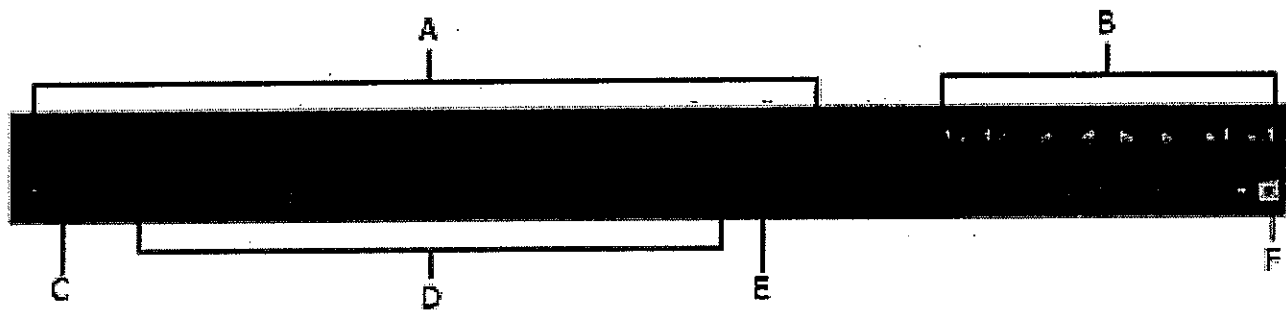
A. Maya allows you to select items in different selection modes depending upon your specific needs. Name and explain the three main types of selection modes. [3 marks]

B. What do you understand by the term parenting while working with hierarchies? [0.5 mark]

C. "Using the IK Handle to pose an IK chain is generally not a good practice." Elaborate on the statement. [2 marks]

D. Differentiate between point constraint and orient constraint. [2 marks]

E. Label the figure below and explain the function of each. [5 marks]



F. Josaia is working on a 3d project, where he has to add lights in a room and animate it through a camera. He is bit confused on how to do this. Help Josaia to:

i. Add a spot light. [0.5 mark]

ii. Prevent the spot light from passing through the concrete wall. [1.5marks]

iii. Add a camera in the scene. [0.5 mark]

iv. Animate the camera to create the animation. [2 marks]

G. Jone has created and rendered a scene in Maya, but forgot to add lights to his scene. Elaborate on the end result of that scene in regards to lights. [1 mark]

H. Differentiate between keyframe animation and set driven key animation. [2 marks]

Question 6**[15 marks]**

- A. What is UV texture coordinates. Explain what it controls. [2 mark]
- B. What is projection mapping? [1 mark]
- C. Maria is working on a polygonal primitive in Maya and wanted to change the texture material from the Attribute Editor. She opened the Attribute Editor but was empty. Explain why the attribute editor is empty. [0.5 mark]
- D. What is the difference between dragging the time indicator on the time slider using the left mouse button and middle mouse button? [1 mark]
- E. John wants to reposition his object 100 units left and 12 units up from the origin and needs your help. Explain and help John move the object in Maya. [0.5 mark]
- F. How do you import reference image in the side view. [2 marks]
- G. What name is given to the group of tools using which you can move, rotate or scale an object? Give exact name. [1 mark]
- H. Differentiate between Lambert and Blinn materials. [1 mark]
- I. Explain the importance of outliner in Maya. Give an example where it can be used. [1 mark]
- J. Differentiate between Forward Kinematics and Inverse Kinematics. [2 marks]
- K. The UValue refers to the curves parameterization. What is parameterization? [1.5marks]
- L. What is a channel Box? [0.5 mark]
- M. Differentiate between 2 dimension and 3 dimension design. [0.5 mark]
- N. There are three ways you can select an object in Maya. Explain the ways? [0.5 mark]

Question 7**[15 marks]**

- A. What is the importance of using transformation tools' reflection setting? [2 marks]
- B. Differentiate between procedural texture and ramp texture. [1 mark]
- C. Explain the feature of revolve surface tool. [1 mark]

- D. What happens when you go to the view menu and select Panels > Layouts > Two Panes Stacked. **[1 mark]**
- E. Blending between motion path and keyframe animation types is possible in Maya. What is Blending? Explain the advantage of blending. **[2 marks]**
- F. Differentiate between wireframe on shaded mode and shaded X-ray mode? **[3 marks]**
- G. The overall production process is divided into three major phases: preproduction, production and postproduction. Explain in detail, what happens in these three phases. **[5 marks]**

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