Total number of printed pages: 3 **Programme(UG) / 4th / UMCD402**

2023

Rigging for 3D Animation

Full Marks: 100

Time: Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1.		*Answer all the multiple-choice questions*	10 x2 = 20
	i)	Which constraint is commonly used in character rigging to create a parent-child relationship between rig controls? a) Scale constraint b) Orient constraint c) Point constraint d) Parent constraint	2
	ii)	What is the purpose of constraints in character rigging? a) To simulate physical dynamics and collisions in character animations. b) To define the shape and proportions of the character model. c) To establish relationships between different rig controls. d) To generate realistic textures and materials for the character.	2
	iii)	What programming language is typically used in the expression editor in Maya? a) Python b) C++ c) JavaScript d) MEL (Maya Embedded Language)	2
	iv)	What is the purpose of a control rig in character animation? a) To create realistic hair and fur simulations b) To drive the movement and deformation of the character model c) To adjust the lighting and shading of the character in a scene d) To generate procedural animations automatically	2

	v)	Which of the following is a type of deformation technique used in character rigging? a) Forward Kinematics (FK) b) Inverse Kinematics (IK) c) Skinning d) Rigging	2
	vi)	What is the purpose of a control hierarchy in character rigging? a) To determine the order of rendering different elements of the character b) To create a visual representation of the character's skeleton c) To establish a parent-child relationship between different rig controls d) To simulate the collision and interaction between character parts	2
	vii)	What is the purpose of a wire deformer in character rigging? a) To control the movement of character hair or fur b) To simulate cloth dynamics on a character c) To create smooth deformations along a curve on the object's surface d) To adjust the overall scale of the character model	2
	viii)	Which of the following is a type of constraint commonly used in character rigging to maintain a fixed distance or orientation between objects? a) Aim constraint b) Parent constraint c) Point constraint d) Orient constraint	2
	ix)	Which tool is commonly used for creating a skeleton of the character? a) Lattice Tool b) Joint Tool c) Sculpt Geometry Tool d) Paint Skin Weights Tool	2
	x)	Which selection tool allows you to select multiple objects or components simultaneously? a) Select Tool b) Paint Selection Tool	2

		c) Quick Select Tool d) Lasso Tool	
2.	a)	How can you create a IK/FK switch in a rig using Maya's tools?	10
	b)	What are some common types of constraints used in character rigs, such as parent, point, aim, orient, scale constraints?	10
3.	a)	What is the significance of the Expression Editor in wheel rigging, and how does it enable the creation of custom rigging behaviors? Could you provide an example of how the Expression Editor can be utilized to establish a relationship between a wheel's rotation and its movement based on the speed of a vehicle through the control?"	10
	b)	What is the proper hierarchy and structure of a basic human skeleton? Please draw and describe the relationships between the main bones, starting from the root.	10
4.	a)	How do non-linear deformers, such as bend, twist, or squash-and-stretch, sine, flare, affect the shape of a character model?	10
	b)	What are some best practices for organizing and naming skinning weights to improve workflow and collaboration?	10
5.	a)	How does rigging play a crucial role in character animation for video games?	10
	b)	How are virtual reality (VR) or augmented reality (AR) technologies being utilized in the rigging process?	5+5
6.	a)	What are *setDrivenKey, Connection Editor* and how can it be used for rigging in Maya? & also write the differences.	3+3+4
	b)	Write any *Ten* Keyboard Shortcuts in Maya	10