



SCHOOL OF SCIENCE AND TECHNOLOGY

Semester 2: Year 2023

FINAL COURSE EXAMINATION PAPER

ITC224: VIRTUALISATION AND ANIMATION

Important Instructions to Students:

1. Read the questions, instructions carefully and answer the questions.
2. You are allowed an **extra 10 minutes reading time** (during this time, you are not allowed to write with pen) and **180 minutes (3 Hours) to complete this paper**.
3. Silent, non-programmable calculators are allowed, but not supplied.
4. Write all your answers in the answer booklet provided. If you need extra sheets, please ask from the supervisor. Write your name, course code and student identification number in the answer booklet and in the attendance sheet.
5. **This Final Course Examination Paper is worth 100 marks contributes 50% of the total course assessments.** Students must **at least score 40%** in this final exam to pass the course.
6. This paper contains two (2) sections A and B. All questions are compulsory.
7. Write all your answers legibly. The marker has the right to award zero for answers that are not legible.
8. This is a **Closed Book Examination**. The University views plagiarism, cheating and dishonest practice as serious offences and if found, offenders are penalized.

Examination Paper Content (Format):

<u>Section</u>	<u>Question</u>	<u>Content</u>	<u>Marks</u>	<u>Suggested Time</u>
A	1-40	Multiple Choice	40	72 minutes
B	1-9	Open Ended Questions	60	108 minutes
		TOTAL	100	180 Minutes

Write the question number and the letter which represents the **most** appropriate answer for each question in the answer booklet.

1. In OpenToonz software, what feature enables you to view multiple frames simultaneously while maintaining transparency?
 - a. Layers
 - b. Onion Skin
 - c. Stop Motion Animation
 - d. Animation

2. In animation, what is rigging primarily responsible for?
 - a. Creating lifelike textures on 3D models
 - b. Generating realistic lighting effects
 - c. Designing characters and scenes
 - d. Defining the movements and control points of characters or objects

3. When using operative words in 2D animation, what aspect of the production process are they most closely associated with?
 - a. Sound design and voice acting.
 - b. Character design and modeling.
 - c. Storyboarding and scene composition.
 - d. Special effects and visual enhancements.

4. What is the advantage of using the plastic tool over traditional frame-by-frame animation in OpenToonz?
 - a. It allows for more precise control over character movements.
 - b. It simplifies the animation process by eliminating the need for keyframes.
 - c. It automatically generates character animations without manual input.
 - d. It is mainly used for 3D animation and not applicable to 2D animation.

5. Which element signifies distinct depth levels when you position your drawings onto it?
 - a. Frame
 - b. Canvas
 - c. Gif
 - d. Layer

6. Which type of interpolation is commonly used in tweening to determine the movement of objects or characters?
 - a. Linear interpolation
 - b. Quadratic interpolation
 - c. Random interpolation
 - d. Exponential interpolation

7. What is the primary advantage of 2D animation over 3D animation?
 - a. 2D animation is more cost-effective.
 - b. 2D animation allows for more realistic character designs.
 - c. 2D animation is faster to produce.
 - d. 2D animation can create immersive 3D environments.
8. Which of the following tasks is typically part of the pre-production phase in animation?
 - a. Animation testing
 - b. Creating storyboards and scripts
 - c. Rendering final frames
 - d. Editing the sound effects
9. What could be the best description of a Key Frame?
 - a. They are starting and ending frames
 - b. They are in between frames
 - c. They are transition frames
 - d. None of the above
10. How can you access the Sound Column for recording audio in OpenToonz?
 - a. Click on "File" > "Record Audio."
 - b. Right-click on the canvas and select "Record Sound."
 - c. Go to "View" > "Audio Recorder" in the top menu.
 - d. Open the "Audio" tab in the FX Schematic.
11. When writing a script for 2D animation, what should you consider to engage the audience effectively?
 - a. Including lengthy technical descriptions.
 - b. Incorporating sudden plot twists without foreshadowing.
 - c. Developing relatable characters and a compelling storyline.
 - d. Focusing on intricate background art and scenery.
12. Which of the following is a part of the basic principles of animation?
 - a. Editing
 - b. Animatics
 - c. Staging
 - d. None of the above
13. What is the role of a storyboard in the animation production process?
 - a. Designing the physical sets for animation scenes
 - b. Creating character models
 - c. Mapping out the sequence of scenes and shots in an animation
 - d. Applying motion capture technology

14. What is the primary purpose of the FX Schematic in OpenToonz?
- Creating character designs and animations
 - Managing and organizing scenes in an animation project
 - Adding visual effects and transitions to animated sequences
 - Adjusting audio settings for your animation
15. How can you adjust the timing of phonemes in Papagayo software to match the audio tracks?
- By clicking and dragging the phoneme markers
 - By pressing the "Auto-sync" button
 - It adjusts automatically
 - By exporting and reimporting the audio
16. What role can virtual machines play in 2D animation workflows?
- Virtual machines are employed to automate character design.
 - Virtual machines can provide a controlled environment for testing animation software and scripts.
 - Virtual machines are used for creating virtual characters.
 - Virtual machines are primarily used for generating 3D animation sequences.
17. What is the primary advantage of using vector shapes created with the geometry shape tool?
- They are fixed in size and resolution.
 - They can be scaled without loss of quality.
 - They are suitable for frame-by-frame animations.
 - They can't be customized.
18. Which of the following best describes a vector layer in OpenToonz?
- A layer used for organizing and controlling animation timing.
 - A layer for storing bitmap images and pixel-based artwork.
 - A layer for creating scalable, resolution-independent graphics.
 - A layer specifically used for audio management.
19. How does a higher FPS setting affect the animation?
- It speeds up the animation playback.
 - It slows down the animation playback.
 - It makes the animation smoother but requires more frames.
 - It has no impact on animation quality.
20. Which type of animations often benefit from using the geometry shape tool?
- Frame-by-frame hand-drawn animations.
 - Stop-motion animations.
 - 3D animations.
 - Flash animations.

21. What type of audio files can typically be imported into OpenToonz for use in 2D animation?
- Image files (e.g., JPEG, PNG)
 - Text files (e.g., TXT, DOCX)
 - Audio files (e.g., MP3, WAV)
 - Video files (e.g., MP4, AVI)
22. What do synchronized blinks between characters in 2D animation often signify?
- A synchronized dance routine.
 - An intense action sequence.
 - Emotional connection and communication.
 - A race against time.
23. What role does the script play in terms of pacing and timing in 2D animation?
- It dictates the animation frame rate and resolution.
 - It specifies the duration of the opening and closing credits.
 - It provides timing cues for character movements and actions.
 - It determines the aspect ratio of the animation.
24. What is the significance of 2D animation in the gaming industry?
- It is the only animation style used in video games.
 - It helps game developers create realistic 3D characters.
 - It is used for creating character sprites, cutscenes, and game interfaces.
 - It is primarily used for game level design.
25. Which principle of animation is often used to make characters appear more lifelike and relatable to the audience?
- Squash and Stretch
 - Secondary Action
 - Solid Drawing
 - Appeal
26. Which phase of the animation production process is the script typically associated with?
- Post-production and editing.
 - Pre-production and planning.
 - Animation and keyframing.
 - Sound design and voice acting.
27. Why is it important to import bitmap images when performing rotoscoping in OpenToonz?
- Bitmap images cannot be used for rotoscoping.
 - Imported images can be traced to create accurate animations.
 - Rotoscoping can only be done with vector graphics.
 - Bitmap images are used for audio synchronization, not rotoscoping.

28. How can virtualization technology improve collaboration in 2D animation projects?
- By creating virtual worlds for team meetings
 - By enabling real-time character design
 - By providing a shared virtual workspace for remote artists
 - By generating 3D prototypes for 2D animations
29. How do nodes connect in the FX Schematic to create an effect sequence when using OpenToonz?
- They don't connect; each node operates independently.
 - Nodes are automatically connected when added to the FX Schematic.
 - You drag and connect nodes with "links" to specify the sequence.
 - You use the "Effects Timeline" to arrange nodes.
30. How does OpenToonz allow you to handle multiple audio tracks within the same animation project?
- It doesn't support multiple audio tracks.
 - You can layer audio tracks in the sound column.
 - You need to create separate OpenToonz projects for each audio track.
 - You can only import one audio file per project.
31. What is the "Solid Drawing" principle in animation concerned with?
- Creating a 3D model of characters.
 - Giving characters a solid, three-dimensional appearance.
 - Emphasizing characters' emotions through exaggerated expressions.
 - Balancing characters on a flat surface.
32. What is the advantage of using the plastic tool over traditional frame-by-frame animation in OpenToonz?
- It allows for more precise control over character movements.
 - It simplifies the animation process by eliminating the need for keyframes.
 - It automatically generates character animations without manual input.
 - It is mainly used for 3D animation and not applicable to 2D animation
33. Are there any automated or AI-driven features in Papagayo software for lip sync?
- Yes, it automates the entire lip sync process
 - No, it's a manual process
 - Only in the premium version
 - It depends on the animation software used
34. How can 2D animation be used for social and cultural impact?
- It doesn't have any social or cultural impact.
 - It can preserve and promote cultural heritage through animated storytelling.
 - It is primarily used for creating 3D art installations.
 - It has no influence on society or culture.

35. After recording audio, what is the next step to synchronize it with your animation in OpenToonz?
- Export the audio and import it into a separate audio editing software.
 - Drag and drop the audio file onto the canvas.
 - Use the "Move Sound" tool to align the audio with the animation frames.
 - Open a separate audio recording software to sync it manually.
36. How can you create a new node for an effect in the FX Schematic?
- Right-click and select "Insert Effect Node."
 - Use the "Brush Tool" to draw a new node.
 - Drag and drop an effect onto the FX Schematic.
 - Go to "File" > "New Effect Node."
37. What is the relationship between FPS and the duration of an animation project?
- Higher FPS settings result in shorter animations.
 - Lower FPS settings result in longer animations.
 - FPS and animation duration are not related.
 - FPS settings have no impact on the animation's length.
38. In OpenToonz, what is the typical location where imported bitmap images are stored?
- They are automatically saved in the "Vector" folder.
 - They are stored in the same directory as the OpenToonz project file.
 - Imported images can only be stored on external drives.
 - They are stored in the "Bitmap" folder
39. In the animation production process, what is the purpose of the distribution phase?
- Developing the initial concept
 - Marketing and promoting the animation
 - Creating the storyboard
 - Creating animation frames
40. Which principle helps animators create realistic and natural movements by observing and mimicking real-life actions?
- Exaggeration
 - Timing and Spacing
 - Solid Drawing
 - Observation and Imitation

Answer ALL the questions from this section in the answer booklet provided.

1. Discuss what is FFmpeg and what is the purpose of using it in OpenToonz software. **(2 marks)**
2. Explain the basic steps involved in using Papagayo software to create lip sync for an animated character? **(4 marks)**
3. Discuss the purpose of projects and scenes in OpenToonz. **(4 marks)**
4. Explain what is the rule of thirds and how will you use it in OpenToonz. Explain with help of an example. **(2 marks)**
5. You have been asked to create a simple animation of dropping a ball from a height. Explain the steps you will take to create a realistic animation using the x-sheets columns in OpenToonz. Make sure to explain the steps clearly and in order of occurrence. Also explain any important elements that need to be taken care of to make the animation look as natural as possible. **(8 marks)**
6. "Blinks have Meaning." Thoroughly explain this statement with help of examples. **(3 marks)**
7. List and explain at least 3 most important skills that an animator must have. **(3 marks)**
8. Swetha is a freelance animator working on a project for a client who wants a 2D animation video for their website. The client has provided her with a detailed script, characters, and background designs for the animation. Swetha will be using a popular 2D animation software called OpenToonz to create this animation. The client has a few specific requirements for the animation, and Swetha needs to ensure the final product meets her client's expectations.

Requirements:

The client has requested a 2D animation that features two main characters in a dialogue scene. They have provided the character designs and backgrounds, but they want Swetha to add a creative touch to make the animation engaging. They've also mentioned that the animation should be 60 seconds long and have smooth, realistic character movements.

Use the above scenario to answer the following questions:

- a. Explain how would Swetha approach the process of importing the character designs and backgrounds into the 2D animation software? **(2 marks)**

- b. Discuss what specific tools or features within the software would she use to ensure smooth and realistic character movements for the 60-second animation? **(2 marks)**
 - c. The client wants to see a draft of the animation within a week. Outline the key steps and timeline for completing the animation project, including any potential challenges that Swetha might encounter? **(2 marks)**
 - d. How would Swetha incorporate the creative elements into the animation to make it engaging while still staying true to the client's vision? **(2 marks)**
 - e. What file formats and export settings would she use to deliver the final animation to the client in the highest quality while ensuring it's compatible with their website? **(2 marks)**
9. You are the lead animator on an upcoming 2D animated film called "The Magical Forest Adventure." The film features a group of three young adventurers – Ilisapeci, Nidish, and Ifereimi Leo - as they embark on a journey through a whimsical, enchanted forest filled with talking animals and magical creatures. The characters will encounter various challenges and surprises on their quest. Your task is to apply the twelve Principles of 2D Animation to bring this fantastical world to life.

Use the above scenario to answer the following questions:

- a. As Ilisapeci, Nidish, and Ifereimi encounter a friendly, bouncy creature called a "Gloob," explain how can you use squash and stretch to make the Gloob's movements convey its playful and elastic nature? **(2 marks)**
- b. The adventurers find a hidden door deep within the forest. Describe how you would use anticipation in animating the characters' reactions as they approach the mysterious door, building up the excitement and curiosity. **(2 marks)**
- c. In a key moment, the group meets a wise, talking owl who imparts valuable advice. How can you use staging to ensure that the audience's focus is on the owl and the importance of its message, while still capturing the magic of the forest in the background? **(2 marks)**
- d. There's a sequence where Ifereimi jumps from one floating platform to another. Explain when you would use straight ahead action and when you would use pose-to-pose animation to create the most dynamic and suspenseful leap. **(2 marks)**
- e. When the adventurers navigate through a dense thicket, they push aside overhanging branches. How will you apply follow-through and overlapping action to make these interactions feel more realistic and immersive? **(2 marks)**
- f. Nidish, and Ifereimi discover a hidden treasure chest. Describe how you would use the principle of slow in and slow out in animating the characters' movements as they reach for the treasure, creating a sense of weight and anticipation. **(2 marks)**
- g. As Ilisapeci uses a magical wand to cast a spell, how will you ensure that the path of the wand movement follows natural arcs, enhancing the spell-casting animation? **(2 marks)**

- h. In a lighter moment, the adventurers take a break to dance with some playful forest fairies. How can you incorporate secondary actions to add charm and personality to the dancing characters? **(2 marks)**
- i. The trio encounters a mischievous squirrel who steals their map. How can you use timing to make the squirrel's quick and comical movements stand out, adding humor to the scene? **(2 marks)**
- j. In a climactic battle with a giant, animated tree stump, how would you use exaggeration to make the battle more exciting and to emphasize the scale and impact of the conflict? **(2 marks)**
- k. The adventurers find a crystal key that's crucial to their quest. Explain how solid drawing can enhance the details and textures of the key, making it look more tangible and valuable. **(2 marks)**
- l. Throughout their journey, the characters will encounter various forest creatures. How can you ensure that each character's design and animation maintain a consistent appeal while reflecting their unique personalities? **(2 marks)**

End of Exam