PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF INFORMATION SCIENCE

MID TERM EXAMINATION

Winter Semester: 2021 - 22

Course Code: BCA 1006

Course Name: INTRODUCTION TO IMMERSIVE TECHNOLOGIES

Program & Sem: BCA(ARVR) II SEM

Date: 12/May/2022

Time: 01:30 PM – 3:00 PM

Max Marks: 50

Weightage: 25%

Instructions:

(i) Read the all questions carefully and answer accordingly.

Part A [Memory Recall Questions]

Answer all the Questions. Each question carries TWO mark. **(5Qx 2M= 10M)**

1. State Calibration. (C.O.No.2) [Knowledge level]

2. Recall the program in which Tom Furness III was involved. (C.O.No.1) [Knowledge level]

3. Describe Tracking. (C.O.No.2) [Knowledge level]

4. Expand HUD. (C.O.No.1) [Knowledge level]

5. Recall the device invented by Ivan Sutherland in 1968. (C.O.No.1) [Knowledge level]

Part B [Thought Provoking Questions]

Answer all the Questions. Each question carries FOUR mark. **(5Qx4M=20M)**

6. Compare between Model Transformation, View Transformation and Projective Transformation with a suitable examples. (C.O.No.2) [Comprehensive level]

7. Explain the drawbacks of Head Mounted devices in present day scenarios. (C.O.No.1) [Comprehensive level]

8. Infer the advantage and disadvantage of using marker less AR. (C.O.No.2) [Comprehensive level]

9. Explain illumination and types of illumination with examples? (C.O.No.2) [Comprehensive level]

10. Distinguish between AR (Augmented Reality) Vs VR(Virtaual Reailty) in terms of cost, hardware, ease of use and applications. (C.O.No.1) [Comprehensive Level]

Part C [Problem Solving Questions]

Answer all the Questions. Each question carries TEN mark.   **(2Qx10M=20M)**

11. Problem Statement: Due to pandemic all of us are using different electronic devices such as laptops, mobiles and tablets for daily communication. These devices need maintenance and servicing at regular intervals.

Proposed Solutions: Online virtual manuals to perform basic service operations.

Requirements: In the app users need to enter their login credentials, select the type and make of the device for which they need the manual. Select from a list, the issue for which they are searching the solution. Virtual manual will show the step-by-step procedure to resolve the problem. For the manual to work, the user provides input by capturing videos from a camera of the mobile device which needs servicing. The app shows different suggestion to be followed. Once user has completed the instructions from the manual, user can give feedback to the app so that it can improve its future experiences.

Apply use case diagram to depict the above scenario.   (C.O.No.1) [Application level]

12. A municipal corporation wants to map a locality it needs a group of sensors to accurately survey the area. Select the best suited sensor fusion in this scenario.

                                                        (C.O.No.2) [Application level]

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END TERM EXAMINATION

Winter Semester: 2021 - 22

Course Code: BCA 1006

Course Name: Introduction to Immersive Technologies

Program & Sem: BCA ARVR– II Sem

Date: 30th June 2022

Time: 01:00PM to 04:00PM

Max Marks: 100

Weightage: 50%

Instructions:

(i)   Read the all questions carefully and answer accordingly.

Part A [Memory Recall Questions]

Answer all the Questions. Each question carries TWO marks.   (10Qx 2M= 20M)

1. Define Tracking.   (C.O.No.2) [Knowledge level]

2. List one AR and VR application each.   (C.O.No.1) [Knowledge level]

3. Define Augmented Reality (AR).   (C.O.No.1) [Knowledge level]

4. List two wearable haptic device.   (C.O.No.2) [Knowledge level]

5. Name any two-rendering techniques.   (C.O.No.3) [Knowledge level]

6. State two modelling techniques.   (C.O.No.3) [Knowledge level]

7. Define Immersion.   (C.O.No.4) [Knowledge level]

8. Recall any two senses for Perception Model.   (C.O.No.4) [Knowledge level]

9. Define Metaverse.   (C.O.No.4) [Knowledge level]

10. List two prominent companies working in Metaverse.   (C.O.No.4) [Knowledge level]

Part B [Thought Provoking Questions]

Answer all the Questions. Each question carries EIGHT marks.   (5Qx8M=40M)

11. Explain Use case diagram with all types of relationship and also list advantages of using use case diagram.   (C.O.No.1) [Comprehension Level]

12. Classify the following devices into head space, body space and world space.

Devices: Smart phones, OST HMDs, Tablets, VST HMDs, Desktop, Laptops, Virtual Mirror and Dynamic Shader lamp   (C.O.No.3) [Comprehension Level]

13. Infer the advantage and disadvantage of using mobile tracking system. Name two mobile system.   (C.O.No.3) [Comprehension Level]

14. Explain presence with its types and also give benefits of high presence in an application.
                                                                          (C.O.No.5) [Comprehension Level]

15. Compare between Marker and Marker less Augmented Reality.
                                                                          (C.O.No.3) [Comprehension Level]

Part C [Problem Solving Questions]

Answer all the Questions. Each question carries TEN marks.   (4Qx10M=40M)

16. You have to design an AR android application for gaming. In the app the following features should be present the app should be able to recognize the location as well as it should be able to recognize the face of its users. Select the software for the creation of the application and briefly explain the Anchors used for the features. Also give the advantages of using the software with some real time examples.   (C.O.No. 2) [Application Level]

17. Problem Statement: Due to pandemic local vendors of clothing stores were not able to open store.

Proposed Solution: Vendors came up with a solution to create a virtual app using which customers can take the virtual trials for dress and order it.

Requirement: In this app users need to enter their mobile number, then in that mobile a onetime password is sent after that then can start the virtual tour of the store then customer can also choose the different clothes for trial, to start the trial of clothes customer need to create a virtual version of itself through scanning its body by the app. The app also has an option for audio tour in which it tells about the description and details of the cloth. Once the customer is satisfied by the clothes then can also order through the app. Sketch a use case diagram for the above scenario.
                                                                          (C.O.No. 1) [Application Level]

18. Illustrate Physical modelling with it's different stages in the VR Boxing game where the user fights another boxer.   (C.O.No. 2) [Application Level]

19. In a hackathon student have given a task to create a VR game to simulate the roller coaster ride. Use the current technology to simulate senses. Demonstrate how you are able to achieve the immersion for the game using visual and audio simulation. Also point out the techniques to avoid motion sickness.   (C.O.No. 4) [Application Level]