B.Tech DEGREE EXAMINATION, DECEMBER 2023
Fifth Semester

18CSE304J - BUILDING APPLICATIONS USING OPEN SOURCE AUGMENTED REALITY AND VIRTUAL REALITY SDKS

(For the candidates admitted during the academic year (2020-2021 & 2021-20222))

Note:

i. **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.

ii. **Part - B** and **Part - C** should be answered in answer booklet.

Time: 3 Hours

Max. Marks: 100

PART - A (20 × 1 = 20 Marks)
Answer all Questions

		Marks	BL	CO

1. _____ is simply the art and science of creating a surface that either mimics the shape of a real-world object or expresses your imagination of abstract objects.   1   1   1
   - (A) Modelling
   - (B) Rendering
   - (C) Creating
   - (D) Developing

2. _____ is the process of turning a 3D scene into a 2D image.   1   1   1
   - (A) 3D rendering
   - (B) 3D modelling
   - (C) 3D developing
   - (D) 3D conceptualization

3. In virtual reality, which of the senses cannot currently be portrayed?   1   1   1
   - (A) smell
   - (B) touch
   - (C) hear
   - (D) visual

4. _____ demonstrates basic light estimation information from the camera frame   1   2   1
   - (A) Basic light estimation
   - (B) SDR Light Estimation
   - (C) HDR Light Estimation
   - (D) CPU Images

5. Which one is an ARKit-specific feature to have a scanned area?   1   1   2
   - (A) AR world map
   - (B) AR collaboration data
   - (C) AR kit coaching overlay
   - (D) AR kit geo anchors

6. Choose any one prerequisite that is required to set up and run Vuforia SDK.   1   3   2
   - (A) unity
   - (B) MS windows
   - (C) Apple iOS
   - (D) Sandbox

7. Where will you be creating the database and targets in the Vuforia developer portal?   1   2   2
   - (A) Device
   - (B) Vumark
   - (C) Cloud
   - (D) Virtual server

8. Wikitude the AR tool leverages   1   1   2
   - (A) 3D model object targets
   - (B) CAD data and 3D model object targets
   - (C) CAD data and 2D model object targets
   - (D) 2D model object targets

9. Acceleration in direction orthogonal to the sensor measurement direction passed into sensor measurement is called   1   3   3
   - (A) Cross-coupling
   - (B) Fixed bias
   - (C) clock error
   - (D) static bias

10. Vuforia is
    (A) Hardware independent
    (B) Hardware dependent
    (C) Software dependent
    (D) Operating system

11. Which is a very specific search problem in SLAM map?
    (A) Relocalization
    (B) Localization
    (C) Retraining
    (D) Training

12. AR.js tool can handle which types of tracking?
    (A) Image and marker tracking only
    (B) Marker and Location-based tracker only
    (C) Image, marker, location-based tracker
    (D) data, image, marker, location-based tracker

13. A student scans an item in the real world and their phone tells them what it is. This is an example of _____
    (A) Augmented reality
    (B) fully immersive virtual reality
    (C) non-immersive virtual reality
    (D) mixed reality

14. A headset such as an Oculus Rift or HTC Vive is an example of _____.
    (A) Augmented reality
    (B) virtual reality
    (C) extended reality
    (D) reality augmentation

15. A _____ can be recorded using the normal light source
    (A) photograph
    (B) holograph
    (C) monograph
    (D) polygraph

16. Real time computer graphics rely on the method
    (A) Rasterization
    (B) Ray tracing
    (C) google glass
    (D) optical glass

17. _____ is NOT a characteristic of virtual reality.
    (A) simulates complete or partial real-world experience
    (B) created by a computer
    (C) stimulates senses like sight, hearing, and touch
    (D) its imaginative experience completely

18. According to Digi-Capital, the global AR market is predicted to be worth approximately how much by 2023?
    (A) $85 million
    (B) $1 million
    (C) $10 million
    (D) $ 5 million

19. Mixed reality is _____
    (A) when the environment is fully computer-generated
    (B) when virtual objects overlaid on the real real-world environment
    (C) when the virtual world combined with real-world
    (D) when physical objects overlaid on a virtual world environment

20. A term to describe the extent to which a user can modify the form and content of a mediated environment.
    (A) vividness
    (B) richness
    (C) interactivity
    (D) mapping

PART - B (5 × 4 = 20 Marks)
Answer any 5 Questions

	Marks	BL	CO
21. Discuss your opinion that reality technologies are mixing up well with the entertainment sector	4	2	3
22. List the features of the Mirror World Application	4	1	1
23. Mention the features of different types of virtual reality with suitable applications	4	1	2

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		Marks	BL	CO

24. Outline the hardware and software components required to set up an augmented reality system — 4   2   3

25. Suggest any four tools and editors that developers can use to create 3D applications in the unreal engine platform — 4   4   4

26. Point out the main advantages of using Unity 3D — 4   2   4

27. Discuss the security aspects of utilizing the Oculus device in immersive technology — 4   1   5

PART - C (5 × 12 = 60 Marks)
Answer all Questions

		Marks	BL	CO

28. (a) How augmented reality is disrupting the automotive industry? — 12   3   1

(OR)

(b) Elaborate the introduction of virtual reality technologies benefiting the defense wings (army/navy/airforce) training necessary that could strengthen the nation's security

29. (a) Illustrate the steps for a basic augmented reality scene setup for an application of your choice — 12   1   2

(OR)

(b) Explain the components and techniques required for developing a VR use case

30. (a) In order to create characters with interesting assets and accessories for a gaming application in virtual reality, suggest the inclusion of the Vuforia engine in utility by stating its features, needs and platform features. — 12   6   3

(OR)

(b) Enlist the Design steps for any AR application using Wikitude & 8th Wall tools

31. (a) Explain the Unity engine Physics & optimization techniques used for developing VR application — 12   2   4

(OR)

(b) Enumerate the steps for Setting up the Unity Engine environment for a VR application

32. (a) Discuss the technological advancement of New Era of Virtual Reality technology through VR Locomotion tool — 12   6   5

(OR)

(b) Explain the functionalities of Metaverse applications through a Real-World Example of your choice

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