

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-V EXAMINATION – WINTER 2025****Subject Code:3155205****Date:21-11-2025****Subject Name:Virtual Reality and Immersive Technology****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

MARKS

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|------------|---|-----------|
| Q.1 | (a) What do you understand by virtual reality? | 03 |
| | (b) Explain Key Elements of Virtual Reality Experience. | 04 |
| | (c) List and discuss applications of mixed reality and Virtual Reality. | 07 |
| Q.2 | (a) What is Aural & Haptic Displays? | 03 |
| | (b) Discuss Interface to the Virtual World-Input & output-Visual. | 04 |
| | (c) Explain variants of SLAM in details. | 07 |
| | OR | |
| | (c) Explain Mobile VR Controller Tracking and explain UI for VR. | 07 |
| Q.3 | (a) What are the benefits/advantages of virtual reality? | 03 |
| | (b) Explain Characteristics of Tracking Technology. | 04 |
| | (c) List and explain the various challenges with Augmented Reality | 07 |
| | OR | |
| Q.3 | (a) Define Tracking, Calibration, and Registration. | 03 |
| | (b) Explain Computer Vision for Augmented Reality. | 04 |
| | (c) Defining augmented reality and explain history of augmented reality. | 07 |
| Q.4 | (a) What is sensor fusion? | 03 |
| | (b) What is VR SDK's? Explain SDK'S and Frameworks. | 04 |
| | (c) Explain Marker Tracking and Multiple-Camera Infrared Tracking. | 07 |
| | OR | |
| Q.4 | (a) What is Motion Tracking? | 03 |
| | (b) What is semi-direct monocular visual odometry (SVO)? | 04 |
| | (c) Explain Vuforia setting up the environment for Application development. | 07 |
| Q.5 | (a) What is Ray casting and physics for AR? | 03 |
| | (b) What is Object Manipulation? | 04 |
| | (c) List ARToolkit and its features. | 07 |
| | OR | |
| Q.5 | (a) Brief about Text optimizing and UI for VR. | 03 |
| | (b) Discuss relationship between Augmented Reality and other Technologies. | 04 |
| | (c) List AR Core and its features. | 07 |
