

Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY
Bachelor of Engineering - SEMESTER - VI EXAMINATION - WINTER 2025

Subject Code: 3160004

Date: 19-11-2025

Subject Name: Fundamental of Semiconductor Package Manufacturing and Test

Time: 02:30 PM TO 05:00 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
Q.1 (a) What is packaging? Explain the need of packaging.	03
(b) Enlist important package components with their usage.	04
(c) Enlist and explain memory and storage package configurations and requirements with relevant diagrams.	07
Q.2 (a) Which are the types of adhesives used in the die attach process?	03
(b) Explain die preparation stages in detail.	04
(c) Explain different die stacking configurations with diagrams. Which factors influence the selection of stacking configuration?	07
OR	
(c) Enlist and describe Quality management principles in ATMP process.	07
Q.3 (a) What is the singulation process in packaging flow? Which is the technology used for the same?	03
(b) Explain flip chip assembly process flow in detail.	04
(c) What is Parametric Testing? Analyze the purpose of collecting Parametric Testing data.	07
OR	
(a) Explain common laser marking defects with examples.	03
(b) Discuss Assembly Open/short test and final test in detail.	04
(c) Explain yield in detail. What are the strategies used to increase yield of a memory product?	07
Q.4 (a) Which are the key performance indicators of ATE equipment?	03
(b) Describe binning in ATE process flow.	04
(c) Enlist and explain steps involved in the organic substrate manufacturing process.	07

OR

- (a) Explain following terms with respect to package reliability: 1)Failure rate 2)Mean time to failure 3)Mean time between failure **03**
- (b) Explain and Compare TMCL and TST. **04**
- (c) Explain package warpage, critical parameters and measurements. **07**
- Q.5** (a) Explain following terms with respect to statistical process control 1)Process stability 2) Process capability 3)Process variation **03**
- (b) What is die attach film? Enlist major ingredients of DAF. **04**
- (c) Explain electrical failure analysis in detail with different failure modes. **07**

OR

- (a) Explain types of flux constituents and describe. **03**
- (b) Discuss and evaluate Cost of Quality in detail. **04**
- (c) Explain various steps of fault analysis with detailed flow. **07**
