

Seat No./Enrollment No.: _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BACHELOR OF ENGINEERING – SEMESTER 6 – EXAMINATION – SUMMER 2026

Subject Code: 3160004

Date: 26/05/2026

**Subject Name: FUNDAMENTAL OF SEMICONDUCTOR PACKAGE
MANUFACTURING AND TEST**

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.**

- Q.1**
- (a)** What is purpose of wafer carrier and list out the different type of wafer carriers? **03**
 - (b)** What is wafer map? Explain it in detail. **04**
 - (c)** Provide any three reasons for the need of solder flux? List out the types of solder flux? **07**
- Q.2**
- (a)** What are the stages in Product Life Cycle Flow? **03**
 - (b)** What is the purpose of Final Test ? What are the test steps involved in it? **04**
 - (c)** What is the purpose Assembly Test Flow? Draw the flow diagram of it. **07**
- OR**
- Q.2**
- (c)** How do we Erase and Program a NAND Cell? Explain with the help of a diagram. **07**
- Q.3**
- (a)** What are the major ingredients of Die attach film? **03**
 - (b)** List down different types of Die attach film with its features. **04**
 - (c)** What is solder paste? Explain 5 constituents of solder paste. **07**
- OR**
- Q.3**
- (a)** What are the differences between Non-destructive wire pull test and Destructive wire pull test? **03**
 - (b)** What is Steady state Temperature Humidity Bias Test (THBT)? **04**
 - (c)** Explain the manufacturing process of organic substrates. **07**
- Q.4**
- (a)** Draw the schematic for Basic FA Flow. **03**
 - (b)** What is a Curve Tracer and What are its applications? **04**
 - (c)** List at least 5 PFA (Physical Failure Analysis)techniques and provide brief description of the same. **07**
- OR**
- Q.4**
- (a)** What are the advantages of Laser Decapsulation over Acid Decapsulation? **03**
 - (b)** What is Passive Voltage Contrasting technique? Provide suitable example to explain the technique. **04**
 - (c)** Describe the Focused Ion Beam technique and its fail modes. Compare it with X-sec technique **07**
- Q.5**
- (a)** Describe a PDCA (Plan,Do,Check,Act) cycle. **03**

- (b) What is the benefit of using the Foundation/Family approach when creating Control Plans? **04**
- (c) What is ISO standard? What is the purpose of ISO standard? Explain ISO9000 family of standards? **07**

OR

- Q.5** (a) What is the difference of Process Stability and Process Capability? **03**
- (b) Describe how FMEA (Failure Mode and Effects Analysis)helps mitigate risks and prevents Issues. **04**
- (c) What are the roles of leaders and employees in implementing QMS and what are the benefits of implementing Quality Management System? **07**
