

Seat No./Enrollment No.: _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 5 – EXAMINATION – SUMMER 2026

Subject Code: 3152909

Date: 02/06/2026

Subject Name: Fabric Formation III

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.**

- Q.1**
- | | | |
|-----|---|----|
| (a) | State the limitations of shuttle looms. | 03 |
| (b) | Give the brief classification of nonwoven. | 04 |
| (c) | Explain the construction and working of cam beat-up motion. | 07 |

- Q.2**
- | | | |
|-----|---|----|
| (a) | Give classification of rapier looms. | 03 |
| (b) | Discuss about selvage formation on projectile loom. | 04 |
| (c) | State and explain the features of modern waterjet looms. Also, state the advantages and problems. | 07 |

OR

- Q.2**
- | | | |
|-----|--|----|
| (c) | With a neat and labeled diagram, explain the needle-punched nonwoven fabric manufacturing technique. | 07 |
|-----|--|----|

- Q.3**
- | | | |
|-----|---|----|
| (a) | Give various features of projectile loom. | 03 |
| (b) | What are the different types of projectiles? explain briefly. | 04 |
| (c) | With the help of neat diagram, explain the torsion bar mechanism of Sulzer projectile loom in detail. | 07 |

OR

- Q.3**
- | | | |
|-----|---|----|
| (a) | Write down the pre-requisite of water jet loom. | 03 |
| (b) | Compare flexible rapier loom with rigid. | 04 |
| (c) | With a neat sketch explain various aspects of rapier heads of flexible rapier loom. | 07 |

- Q.4**
- | | | |
|-----|---|----|
| (a) | Discuss the differences between water jet and air jet weaving machines. | 03 |
| (b) | Discuss merits and demerits of water-jet weaving machine. | 04 |
| (c) | With a neat sketch discuss working of single nozzle picking mechanism of WIVITA air jet loom. | 07 |

OR

- Q.4**
- | | | |
|-----|---|----|
| (a) | What is cross lapper? State its functions. | 03 |
| (b) | Discuss various applications of nonwoven fabrics in the field of automotive industry. | 04 |
| (c) | Explain various methods of web bonding. | 07 |

- Q.5**
- | | | |
|-----|--|----|
| (a) | Compare 2D woven fabric with 3D woven fabric. | 03 |
| (b) | Define Nonwoven fabric. State the advantages of nonwoven fabric. | 04 |

(c) Explain working principle of maypole braiding machine.

07

OR

Q.5 (a) State application of leno weaving. **03**

(b) What do mean by circular weaving? Explain in brief. **04**

(c) Explain principle of melt blown process with diagram. **07**
