

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-V (NEW) EXAMINATION – WINTER 2024

Subject Code:3152909

Date:09-12-2024

Subject Name:Fabric Formation III

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) Give brief classification of rapier looms. **03**
(b) Define nonwoven fabric. Explain random laid dry web formation method. **04**
(c) With the help of neat diagram, explain needle punch web formation method in detail. **07**
- Q.2** (a) Compare rigid rapier with flexible rapier loom **03**
(b) Calculate weft insertion rate of rapier loom in metres/minute if its speed is 750 rpm and width of loom is 190 centimeter. Also, calculate the production of machine in metres/shift of 8 hours if 52 picks are inserted per inch of fabric at 92 % efficiency. **04**
(c) Write a note on Accumulators. **07**
- OR**
- (c) Compare spunbond with spunlace fabric. With the help of neat diagram, explain the method of production of spunlace fabric in detail. **07**
- Q.3** (a) Give brief classification of shuttleless loom. **03**
(b) Give classification of fabric bonding techniques. **04**
(c) Explain construction and working of cam beat up mechanism of projectile loom with suitable diagram. **07**
- OR**
- Q.3** (a) State the advantages and problems of water-jet loom. **03**
(b) Explain application of nonwoven fabric in technical textile. **04**
(c) Explain the confusor system on air-jet loom. **07**
- Q.4** (a) Discuss the scope of rapier looms in technical textiles. **03**
(b) Explain rapier heads with suitable diagram. **04**
(c) Explain double rapier tip transfer type of weft insertion system with suitable diagram. **07**
- OR**
- Q.4** (a) Discuss about needle commonly used in needle punching machine. **03**
(b) Explain the relay-jet system on air-jet looms. **04**
(c) With the help of neat diagram, explain torsion bar picking mechanism of projectile loom. **07**
- Q.5** (a) Discuss briefly about application of narrow weaving fabric. **03**
(b) Describe principle of Braiding machine. **04**
(c) State the importance of selvages. Explain, in detail, different types of selvages formed on shuttleless looms. **07**
- OR**
- Q.5** (a) Discuss briefly about 3D woven fabric. **03**
(b) Discuss about application of adhesive fibres and bicomponent fibres. **04**
(c) Write short note on circular weaving machine. **07**
