

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2024****Subject Code: 3152901****Date: 18-05-2024****Subject Name: Yarn Manufacture 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.

|            |                                                                                                                                                          | <b>MARKS</b> |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>Q.1</b> | (a) What are the objectives of Ring frame?                                                                                                               | <b>03</b>    |
|            | (b) Define the following terms: (i) Traveller circle, and (ii) Center of Gravity for traveler.                                                           | <b>04</b>    |
|            | (c) With a suitable sketch explain the passage of material on Ring frame.                                                                                | <b>07</b>    |
| <b>Q.2</b> | (a) Write the function of Traveler. Give the name of the different types of travellers used in the Ring frame.                                           | <b>03</b>    |
|            | (b) Discuss the construction and working of Roving bobbin holders used in creel section of Ring frame.                                                   | <b>04</b>    |
|            | (c) Write the function of Ring. Also, give the classification of ring. With a suitable sketch show the various parts of ring along with their functions. | <b>07</b>    |
|            | <b>OR</b>                                                                                                                                                |              |
|            | (c) Discuss the working of bobbin building mechanism used in Ring frame.                                                                                 | <b>07</b>    |
| <b>Q.3</b> | (a) Discuss the characteristics of a good Ring.                                                                                                          | <b>03</b>    |
|            | (b) Discuss any four modern developments in the Ring frame.                                                                                              | <b>04</b>    |
|            | (c) Discuss the construction of spindle used in Ring frame.                                                                                              | <b>07</b>    |
|            | <b>OR</b>                                                                                                                                                |              |
| <b>Q.3</b> | (a) Discuss the important features of inclined ring and traveller.                                                                                       | <b>03</b>    |
|            | (b) Explain any one type of top arm roller drafting system used in Ring frame.                                                                           | <b>04</b>    |
|            | (c) With suitable sketches explain the different types of spindle drive used in the Ring frame.                                                          | <b>07</b>    |
| <b>Q.4</b> | (a) Name the materials used for manufacturing high performance Ring and Traveler.                                                                        | <b>03</b>    |
|            | (b) Based on the balloon theory write the basic conditions required for stable spinning process.                                                         | <b>04</b>    |
|            | (c) Discuss the various spinning parameters which influence the spinning balloon height.                                                                 | <b>07</b>    |
|            | <b>OR</b>                                                                                                                                                |              |
| <b>Q.4</b> | (a) Draw sketches to show the different types of twist used in yarn.                                                                                     | <b>03</b>    |
|            | (b) What is yarn doubling? Discuss the different types of yarn doubling method.                                                                          | <b>04</b>    |
|            | (c) With a suitable sketch show the working principle of TFO machine.                                                                                    | <b>07</b>    |

- Q.5** (a) Discuss the limitations of the Ring doubler and TFO machine. **03**  
(b) What is fancy yarn? Discuss the various applications of the fancy yarns. **04**  
(c) With a suitable sketch explain the manufacturing process of loop yarn. **07**
- OR**
- Q.5** (a) Discuss the effect of Z on Z, and S on Z twist in double yarn. **03**  
(b) Draw sketches to show the various types of yarn tensioners used in TFO machine. **04**  
(c) Discuss the construction Gimp yarn, Marl yarn, and Diamond yarn. **07**

\*\*\*\*\*