

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-IV (NEW) EXAMINATION – WINTER 2023****Subject Code:3141908****Date:24-01-2024****Subject Name: Manufacturing Processes****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.

|     |                                                                                                                    | MARKS |
|-----|--------------------------------------------------------------------------------------------------------------------|-------|
| Q.1 | (a) Classify basic machine tools used in the workshop.                                                             | 03    |
|     | (b) Describe primary and secondary motions used in the machine tools.                                              | 04    |
|     | (c) Illustrate single point cutting tool geometry and its signature with sketch.                                   | 07    |
| Q.2 | (a) Describe about alignment test of lathe machine.                                                                | 03    |
|     | (b) Differentiate between Capstan and Turret Lathe                                                                 | 04    |
|     | (c) List the different methods of taper turning on lathe. Explain about taper turning attachment with neat sketch. | 07    |
|     | <b>OR</b>                                                                                                          |       |
|     | (c) Elaborate Operations carried out on lathe machine with a neat sketch.                                          | 07    |
| Q.3 | (a) Differentiate between drilling and boring operations.                                                          | 03    |
|     | (b) Write a short note on radial drilling machine.                                                                 | 04    |
|     | (c) Classify drills. Explain nomenclature of twist drill with neat sketch.                                         | 07    |
|     | <b>OR</b>                                                                                                          |       |
| Q.3 | (a) Give any four applications of drilling machine.                                                                | 03    |
|     | (b) Explain horizontal boring machine with neat sketch.                                                            | 04    |
|     | (c) List the drilling operations. Explain any five operations with neat sketches.                                  | 07    |
| Q.4 | (a) Differentiate between Up milling and Down milling processes.                                                   | 03    |
|     | (b) Explain alignment test of Milling machine with a sketch.                                                       | 04    |
|     | (c) Explain about crank and slotted link quick return mechanism in shaper machine.                                 | 07    |
|     | <b>OR</b>                                                                                                          |       |
| Q.4 | (a) Classify Milling machine as per application and structure.                                                     | 03    |
|     | (b) What is indexing? Describe direct indexing with example.                                                       | 04    |
|     | (c) With the help of a neat sketch explain the column and knee type milling machine and name its main parts.       | 07    |
| Q.5 | (a) Write advantages and limitations of broaching.                                                                 | 03    |
|     | (b) How grinding wheel is specified?                                                                               | 04    |
|     | (c) Illustrate surface grinding machine with a neat sketch.                                                        | 07    |
|     | <b>OR</b>                                                                                                          |       |
| Q.5 | (a) Explain how to cut internal keyway on slotter machine with neat sketch.                                        | 03    |
|     | (b) Explain about dressing and truing of grinding wheel.                                                           | 04    |
|     | (c) Describe grinding wheel characteristics and wheel selection procedure in details.                              | 07    |

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