

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE- SEMESTER-V (NEW) EXAMINATION – WINTER 2020****Subject Code:3151912****Date:01/02/2021****Subject Name:Manufacturing Technology****Time:10:30 AM TO 12:30 PM****Total Marks: 56****Instructions:**

1. Attempt any **FOUR** questions out of **EIGHT** questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

|  | <b>MARKS</b> |
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| <b>Q.1</b> (a) Define the following terms as used in sand mould casting  | <b>03</b>    |
| 1. Core  |              |
| 2. Core-Prints   |              |
| 3. Sprue   |              |
| (b) State the eight examples of products produced by foundry technology.   | <b>04</b>    |
| (c) Explain various types of pattern allowances with a neat sketch.  | <b>07</b>    |
| <b>Q.2</b> (a) Enlist the various type of patterns used in the casting process.  | <b>03</b>    |
| (b) Differentiate between Pressure die casting and Permanent mould casting.  | <b>04</b>    |
| (c) Describe the Shell mould casting process in terms of steps involved, its advantages and disadvantages with the help of a neat sketch.  | <b>07</b>    |
| <b>Q.3</b> (a) State the purpose of coating on an arc welding electrode.   | <b>03</b>    |
| (b) Sketch the four types of basic welding joints used in welding.   | <b>04</b>    |
| (c) Discuss the TIG welding process setup with the help of a neat sketch also enlist advantages, disadvantages, and applications.  | <b>07</b>    |
| <b>Q.4</b> (a) Two steel plates each 1 mm thick are spot welded at a current 5000 A. The current flow time is 0.1 s. Calculate the heat generated in the weld zone. The effective resistance in the operation is 200 $\mu\Omega$ . | <b>03</b>    |
| (b) Discuss the benefits of the use of inert gas in the TIG welding process.   | <b>04</b>    |
| (c) Sketch the three types of flames used in the oxy-acetylene welding process. Give the uses of each.   | <b>07</b>    |
| <b>Q.5</b> (a) Define the following terms  | <b>03</b>    |
| 1. Blooms  |              |
| 2. Billets   |              |
| 3. Slabs   |              |
| (b) Compare the forged parts and cast parts in terms of grain size, directional properties, defects, and mechanical properties.  | <b>04</b>    |
| (c) Distinguish between wire drawing and tube drawing with neat sketches.  | <b>07</b>    |
| <b>Q.6</b> (a) Define the following terms:   | <b>03</b>    |
| 1. Forward slip  |              |
| 2. Backward slip   |              |
| 3. Neutral point   |              |
| (b) For the rolling process, Derive the equation for the length of deformation zone $l = \sqrt{R\Delta t}$   | <b>04</b>    |
| (c) Differentiate between Hot and Cold working processes.  | <b>07</b>    |
| <b>Q.7</b> (a) State the advantages of various properties of plastic that ease various plastic manufacturing processes.  | <b>03</b>    |
| (b) Define additives, Explain the function of plasticizers, catalysts, and initiators.   | <b>04</b>    |

- (c) Sketch and explain the injection moulding process. **07**
- Q.8** (a) State the significance of the superfinishing process. **03**  
(b) With the help of a neat diagram explain the superfinishing process. **04**  
(c) Discuss the factors that need to be considered for selecting the manufacturing processes. **07**

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