

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2022****Subject Code:3161926****Date:21/06/2022****Subject Name:Industry 4.0****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**

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|------------|--|-----------|
| <b>Q.1</b> | (a) What is cyber physical system?   | <b>03</b> |
|            | (b) Which industry branches are suitable for industry 4.0 development?   | <b>04</b> |
|            | (c) How is India preparing for Industry 4.0?   | <b>07</b> |
| <b>Q.2</b> | (a) Enlist the key benefits of technology road mapping for industry 4.0.   | <b>03</b> |
|            | (b) What do you mean by Industry 4.0 and how it is associated with IoT?  | <b>04</b> |
|            | (c) Explain Proposed Framework for Industry 4.0.   | <b>07</b> |
|            | <b>OR</b>  |           |
|            | (c) Elaborate Technologies behind Industrial revolution 4.0.   | <b>07</b> |
| <b>Q.3</b> | (a) Why should you implement industry 4.0 solutions?   | <b>03</b> |
|            | (b) List down all industrial revolutions. Define Industry 4.0 and give reasons for its implementation.   | <b>04</b> |
|            | (c) Explain six design principles for Industry 4.0.  | <b>07</b> |
|            | <b>OR</b>  |           |
| <b>Q.3</b> | (a) How much does it cost to implement an industry 4.0 solution?   | <b>03</b> |
|            | (b) Enlist the various challenges for Industry 4.0 transformation.   | <b>04</b> |
|            | (c) Explain in detail the Industrial Applications of AR.   | <b>07</b> |
| <b>Q.4</b> | (a) What are the risks of an industry 4.0 solution?  | <b>03</b> |
|            | (b) Explain the concept of Augmented Reality.  | <b>04</b> |
|            | (c) Explain the Industrial Robotics applications in context of 1) Manufacturing 2) Maintenance 3) Assembly 4) Training   | <b>07</b> |
|            | <b>OR</b>  |           |
| <b>Q.4</b> | (a) What is IoRT? Enlist the various components of IoRT.   | <b>03</b> |
|            | (b) Write a short note on advances in sensor technology in a robotics in context of Industry 4.0.  | <b>04</b> |
|            | (c) Explain IoRT classification according to application areas.  | <b>07</b> |
| <b>Q.5</b> | (a) What is 5G and how will it accelerate industry 4.0?  | <b>03</b> |
|            | (b) What are the various AR Hardware and software technology?  | <b>04</b> |
|            | (c) Explain the legal framework conditions for the industry 4.0.   | <b>07</b> |
|            | <b>OR</b>  |           |
| <b>Q.5</b> | (a) How does Industry 4.0 affect workers?  | <b>03</b> |
|            | (b) What is Industry 4.0 Cyber Security?   | <b>04</b> |
|            | (c) What do you understand by smart factories and how do you propose the application of Artificial Intelligence and robotics will be beneficial in its implementation? | <b>07</b> |

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