

Register No.: ..... Name.: .....

**SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)**

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

**FOURTH SEMESTER MBA DEGREE EXAMINATION (Regular), JULY 2022****(2020 Scheme)****Course Code : 20MBA204****Course Name: Industry 4.0 and AI Applications for Business****Max. Marks : 60****Duration: 3 Hours****PART A***(Answer all questions. Each question carries 2 marks)*

1. List the benefits of AI in Industry 4.0.
2. Explain Additive Manufacturing.
3. What are Intelligent Manufacturing Platforms?
4. Illustrate 'Passive Attack' in cyber security.
5. How did the change in the work environment and nature of work affect the employees when Implementing Industry 4.0?

**PART B***(Answer any 3 questions. Each question carries 10 marks)*

6. Analyze the impact of AI? List the benefits, opportunities and challenges of implementing AI?
7. Explain various network technologies that can be used in Industry 4.0 with example
8. Discuss the applications of Industry 4.0 in Power Plants and Facility Management Domains.
9. Discuss the industrial challenges of cyber security.
10. Analyze the ethical and trust issues of AI in Industry 4.0 implementation.

**PART C***(Compulsory question, the question carries 20 marks)*

11. Industry 4.0 implementation

Industry 4.0" refers to the latest major change in industrial development — automation, data exchange, and virtualization through the use of artificial intelligence (AI) and other smart technologies. Industry 4.0 is constantly evolving and new technologies are developed every day, but there are four primary technologies that make up Industry 4.0 are Internet of Things, Big Data, Digital Twins and Cloud Computing.

Industry 4.0 is revolutionizing manufacturing, particularly when it comes to predictive maintenance. Predictive maintenance is a manufacturing best practice based on a theoretical rate of asset failure. Instead of waiting for something to break, manufacturers use predictive maintenance to preemptively replace parts or tools to reduce downtime.

Using regular, data-driven maintenance schedules keeps the unused lifespan of a given part to a minimum. Downtime can result in extensive financial losses, something preventative maintenance can help to avoid. The increased long-term reliability of processes leads to greater output capacity, increased part quality, and long-term cost savings.

Digital twin technology is software solution that uses sensors, cameras, and other forms of IoT data collection to create a virtual model of a process or product that not only interactively updates with its physical counterpart, but can also be used to test how the part or process responds in different scenarios. Used properly, digital twin technology can help companies optimize their products and processes to be more efficient and cost-effective.

Today most production managers are participating in a race, whether they know it or not. It's the race to adopt and implement new manufacturing systems and technologies.

While adopting new technology is always challenging, this process is made more difficult by the fact that most factories already have a set of systems in place. These systems tend to be somewhat rigid, and may actively resist change, even when it's for the better of the company. This, combined with the sheer pace of technological adaptation, creates an environment within which most manufacturing companies struggle to implement new technology.

Fortunately, it's possible for manufacturing executives and leaders to implement technological change while also developing a company culture that will promote efficiency and improvement for years to come. The secret is Industry 4.0. Wondering how it works or why it matters? You're not alone.

Keep this in mind, an Indian manufacturing company trying to implement Industry 4.0 and assigning you with the task of introducing the new system of Industry 4.0 with a view to market their products and services globally so that they can compete with the global giants in the respective area.

- a) Discuss how the concepts of automation and data exchange can be connected with the present activities of the organization. Marks (10)
- b) Discuss the steps to implement Industry 4.0. Marks (10)

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