**SHRI KHANDERAI PRATISHTHAN'S**
**DNYANSAGAR INSTITUTE OF MANAGEMENT & RESEARCH**
(Approved by AICTE, New Delhi, Recognized By Govt. of Maharashtra, Affiliated to S. P. Pune University)
(AISHE Code : C - 41293, PUN Code - IMMP014030)

**DIMR**

**MBA-II / SEM-IV / Year 2024-25**
**COMPREHENSIVE CONCURRENT EVALUATION**
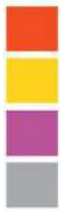
**Subject: Industry 4.0**                    **Sub Code: 404 SC-OSCM-06**

| Sr. No. | Parameter / Component | Marks | Date of Exam/Submission |
|---------|----------------------|-------|------------------------|
| 1 | Case Study | 50 | 10th March |
| 2 | Written Home Assignment | 50 | 10th March |
| 3 | End Semester Examination | 50 | - |

## Instructions:

1. The last date of Submission is 10th March

2. Case Study should be submitted in person. All cases are compulsory.

3. Case study should be hand written and in your own words, if case study is found same as other classmate's it will not be considered for assessment.

4. Incomplete assignment will not be accepted.

5. Student name, specialization, Roll no., must be clearly mentioned.

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- **Case Study 1**

  - *Smart Manufacturing with IoT*

A leading automotive company has integrated IoT sensors in its production lines to monitor equipment performance in real time. These sensors collect data on machine temperature, vibration, and production speed, helping predict potential failures before they occur. As a result, downtime has been significantly reduced, and maintenance costs have decreased.

**Questions:**

1. How does predictive maintenance using IoT improve manufacturing efficiency?
2. What challenges might a company face when implementing IoT-based predictive maintenance?

- **Case Study 2**

  - *AI-Driven Quality Control in Manufacturing*

A consumer electronics manufacturer has adopted AI-powered cameras and machine learning algorithms for real-time quality inspection of products. These AI systems can detect even minor defects that human inspectors might miss, improving product quality and reducing waste.

**Questions:**

1. How does AI improve quality control in manufacturing?
2. What steps can companies take to prevent cyberattacks on industrial systems?
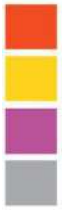
- **Case Study 3**

  - *Digital Twin Technology in Supply Chain Management*

A logistics company has implemented digital twin technology to create a virtual model of its entire supply chain. This allows managers to simulate different scenarios, predict bottlenecks, and optimize logistics planning. The company has seen a 20% reduction in transportation costs and improved delivery efficiency.

**Questions:**

1. How can digital twins enhance supply chain efficiency?
2. What data sources are required to create an effective digital twin model?

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- **Case Study 4**

  - *3D Printing in Aerospace Manufacturing*

An aerospace company has started using 3D printing to manufacture lightweight yet durable aircraft components. This has led to reduced material waste, faster production cycles, and cost savings. However, the company faces regulatory challenges in getting 3D-printed parts certified for commercial use.

**Questions:**

1. How does 3D printing benefit aerospace manufacturing?
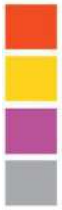2. What are the challenges of adopting 3D printing in industries like aerospace?

- **Case Study 5**

  - *Cyber security Challenges in Smart Factories*

A manufacturing firm has transitioned to a fully connected smart factory, where machines, sensors, and systems communicate over the internet. However, the company recently faced a cyber-attack that disrupted operations and resulted in data breaches. The management is now focusing on strengthening cyber security measures.

**Questions:**

1. Why is cyber security crucial in Industry 4.0 smart factories?
2. What steps can companies take to prevent cyber-attacks on industrial systems?

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# Written Home Assignment

1. A manufacturing company wants to implement AI-driven robots on its production line. What challenges might they face, and how can they overcome them?

2. A logistics company is using block chain for tracking shipments. How does block chain improve transparency and security in supply chain management?

3. Will widespread adoption of Industry 4.0 lead to a decrease in overall energy consumption in manufacturing processes?

4. With increased automation and data collection, how can companies ensure worker privacy and prevent misuse of employee data?

5. What role will Augmented Reality (AR) and Virtual Reality (VR) play in training and upskilling the workforce for Industry 4.0 jobs?

6. Can Industry 4.0 bridge the gap between developed and developing nations by promoting innovation and technology access in manufacturing?

7. How will the role of maintenance technicians evolve in smart factories driven by predictive maintenance and sensor-based monitoring?

8. What are some potential security vulnerabilities that could arise from the interconnected nature of Industry 4.0 systems?

9. How can Industry 4.0 principles be applied to non-manufacturing sectors like healthcare or education to improve efficiency and outcomes?

10. Will the concept of a traditional factory disappear entirely in the future, replaced by fully automated and data-driven production systems?