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**Presidency University**

**Bengaluru**

 **School of Management**

**SUMMER TERM END TERM EXAMINATION AUGUST 2024**

**Date**: 5 Aug 2024

**Time**: 1:00pm – 4:00pm

**Max Marks**: 100

**Weightage**: 50%

**Semester**: IV

**Course Code**: MBA3049

**Course Name**: Industry 4.0

**Department:** SOM

 **Instructions:**

1. *Read the all questions carefully and answer accordingly.*
2. *Do not write any information on the question paper other than roll number.*
3. *Question paper consists of 3 parts.*

**PART A**

**Answer any 10 Questions. Each question carries 3 marks. (10Qx 3M= 30)**

1. List at least five (5) latest trends of Business Transformation in Industry 4.0. (CO:2) [Knowledge]
2. Recognize at least five (5) factors leading to successful business transformation. (CO:2) [Knowledge]
3. Identify the four (4) foundational technologies as per McKinsey. (CO:2) [Knowledge]
4. Define the term 'Geospatial Technology' with suitable examples. (CO:2) [Knowledge]

1. Recall the way data is getting massive in the current era of industry 4.0. (CO:2) [Knowledge]
2. State the three (3) 'drivers' of Industry 4.0 (CO:01 Knowledge)
3. Identify the technology enablers fueling the industry 4.0 (CO:01 Knowledge)
4. Recall the six countries leading the fourth industrial revolution. (CO:01 Knowledge)
5. With suitable examples, demonstrate the six (6) design principles of Industry 4.0. (CO:02 Knowledge)
6. Identify the characteristics of a Smart City. (CO:02 Knowledge)
7. Explain the four (4) characteristics of Smart Products. (CO:02 Knowledge)
8. Explain how smart logistics contribute to the optimization of supply chain operations in the era of Industry 4.0? Provide examples. (CO:02 Knowledge)
9. With relevant examples, explain the characteristics of an IIoT-enabled industry. (CO:03 Knowledge)

**PART B**

**Answer any 4 Questions. Each question carries 10 marks. (4Qx 10M= 40)**

1. With the help of relevant examples, discuss the pivotal moments in IOT market evolution. (CO: 2) Application)
2. With suitable examples, explain five (5) ways in which IoT is transforming businesses in the era of digital transformation. (CO:02 Application)
3. Using suitable examples, discuss the trends driving the need for business transformation

 (CO: 02 Application)

1. With the help of relevant examples, discuss the pivotal moments in IOT market evolution.  (CO:03 Application)
2. In the era of Industry 4.0, everything is getting shifted to Cloud Computing Platforms. In light of this context, describe in detail, the benefits and risks of moving your business operations onto cloud, with suitable examples.  (CO:02 Application)
3. Define the concept of the Industrial Revolution and explain the key characteristics of each revolution. (CO:03 Application)

**PART C**

**Answer the following Questions. (2Qx 15M= 30)**

1. **Leveraging Data Analytics for Operational Excellence**

Global Manufacturing Corp. (GMC), a multinational company with operations spanning multiple countries, recognized the potential of data analytics in optimizing its manufacturing processes. By leveraging data generated from sensors, machines, and production lines, GMC aimed to improve operational efficiency and drive continuous improvement.

**Challenges Faced:** GMC faced several challenges in harnessing the power of data analytics. They had to overcome issues related to data silos, divergent systems, and data quality issues. Moreover, there were concerns about the lack of data literacy and analytical skills among employees, hindering the adoption and implementation of data-driven initiatives.

**Implementation Strategy:** To address these challenges, GMC developed a comprehensive data analytics strategy. They invested in data integration tools and platforms to aggregate and harmonize data from various sources. Additionally, they launched training programs to enhance data literacy and analytical skills among employees, empowering them to leverage data insights for decision-making.
**Results Achieved:** As a result of their data analytics initiatives, GMC experienced significant improvements in operational performance. They were able to identify inefficiencies, bottlenecks, and anomalies in real time, enabling proactive intervention and optimization. Moreover, data-driven insights enabled GMC to predict maintenance needs, reduce downtime, and improve overall equipment effectiveness (OEE) across their manufacturing facilities.

**Questions for discussion:**

1. What were some of the key challenges faced by GMC in leveraging data analytics for operational excellence?
2. What role did training and development programs play in enhancing data literacy and analytical skills among GMC employees?
3. What were some of the tangible benefits achieved by GMC because of their data analytics initiatives?
4. How can other manufacturing companies learn from GMC's experience in leveraging data analytics for operational excellence? (CO: 04 Analysis)
5. Case: Revolutionizing Farming Practices with IoT

Green Farms Ltd., a leading agricultural company, recognized the potential of Industry 4.0 technologies in revolutionizing farming practices. In pursuit of this goal, they embarked on a journey to transform their traditional farming operations into smart, data-driven ecosystems.

Challenges Faced: Green Farms faced several challenges in adopting Industry 4.0 technologies in agriculture. They had to overcome issues related to limited connectivity in rural areas, interoperability between different IoT devices, and concerns about data privacy and security. Moreover, there were challenges related to the integration of digital technologies with traditional farming practices.

Implementation Strategy: To address these challenges, Green Farms developed a phased implementation strategy. They started by deploying IoT sensors across their fields to collect real-time data on soil moisture, temperature, and crop health. They then integrated this data with weather forecasts and historical yield data to generate predictive insights and recommendations for optimized farming practices.

Results Achieved: As a result of their smart agriculture initiatives, Green Farms experienced significant improvements in crop yields, resource utilization, and sustainability. By leveraging data-driven insights, they were able to optimize irrigation schedules, minimize water usage, and reduce environmental impact. Moreover, real-time monitoring enabled early detection of pest infestations and disease outbreaks, enabling proactive intervention and crop protection. (CO: 04 Analysis)

Questions for discussion:

* 1. What were some of the key challenges faced by Green Farms in adopting Industry 4.0 technologies in agriculture?
	2. How did Green Farms address issues related to limited connectivity and interoperability in rural areas?
	3. What role did IoT sensors play in collecting real-time data for smart agriculture applications?
	4. What were some of the tangible benefits achieved by Green Farms as a result of their smart agriculture initiatives?
	5. How can the experience of Green Farms in smart agriculture inform and inspire other agricultural companies to embrace Industry 4.0 technologies?