

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech.

Branch : Electrical Engineering

Semester : VIII

Subject Code & Name: BTEEP801:6

Introduction to Industry 4.0 and Industrial Internet of Things

Max Marks: 60

Date:07/07/2022

Duration: 3.45 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

	(Level/CO)	Marks
Q. 1 Solve any Two of the following.		
A) Name of all seven types of waste in LEAN?	Remember	6
B) Explain static characteristics of sensor?	Understand	6
C) Illustrate different Globalization Issues in Industry 4.0?	Application	6
Q.2 Solve any Two of the following.		
A) List QoS policies for IoT network?	Remember	6
B) Explain Feature of Cyber Physical Systems?	Understand	6
C) Illustrate the Next Generation Sensors?	Application	6
Q. 3 Solve any Two of the following.		
A) List various types of business models for IoT?	Remember	6
B) Illustrate the Product Lifecycle Management (PLM)?	Understand	6
C) Demonstrate various components of cybersecurity?	Application	6
Q.4 Solve any Two of the following.		
A) Identify three key elements of Industrial Internet?	Remember	6
B) Describe major components of Industrial Control System?	Understand	6
C) Illustrate Fog Computing and why Fog Computing for IIoT?	Application	6
Q. 5 Solve any Two of the following.		
A) List various types of Industrial Control Systems?	Remember	6
B) Explain Master Slave Architecture of Hadoop?	Understand	6
C) Illustrate various features of Smart Factory?	Application	6

*** End ***

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(Level/CO)

Q. 1 Solve Any Two of the following.

- A) Define actuators, give its classification and discuss working of electric linear actuator with neat diagram. (L3/CO1)
- B) With the help of protocol diagram discuss working of Message Queue Telemetry Transport system. (L3/CO1)
- C) Discuss emerging issues and their sustainability assessment for IIoT. (L3/CO1)

Q.2 Solve Any Two of the following.

- A) Define product lifecycle management and discuss its role in industry 4.0. (L3/CO2)
- B) State merits of industrial internet and discuss its application in power plant. (L3/CO2)
- C) What do you mean by KUKA? With suitable diagram explain its working. (L3/CO2)

Q. 3 Solve Any Two of the following.

- A) Describe in brief, working of temperature sensor interface circuit using LM35 and DS1621. (L3/CO3)
- B) With the help of block diagram discuss the working of gas sensing system. (L3/CO3)
- C) Write and discuss the transmitter program for Xbee transmitter (L3/CO3)

Q.4 Solve Any Two of the following.

- A) Describe Machine learning and Deep learning in Industrial Internet of Things analytics. (L3/CO4)
- B) Draw and discuss fog computing architecture for Industrial Internet of Things. (L3/CO4)
- C) With the help of suitable diagram discuss the protocol stack for SD-6TiSCH. (L3/CO4)

Q. 5 Solve Any Two of the following.

- A) Define digital twin and discuss the smart grid in power system with suitable diagram. (L3/CO5)
- B) Discuss the work-flow of oil and gas industry with respect to IoT. (L3/CO5)
- C) Describe the application of UAV in forestry. (L3/CO5)

*** End ***