NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA (An Autonomous Institute Affiliated to AKTU, Lucknow) **B.Tech** SEM: V - THEORY EXAMINATION (2024-2025) **Subject: Applied Industrial IoT Time: 3 Hours General Instructions: IMP:** *Verify that you have received the question paper with the correct course, code, branch etc.* 1. This Question paper comprises of three Sections -A, B, & C. It consists of Multiple Choice *Questions (MCQ's) & Subjective type questions.* 2. Maximum marks for each question are indicated on right -hand side of each question. 3. Illustrate your answers with neat sketches wherever necessary.

4. Assume suitable data if necessary.

5. Preferably, write the answers in sequential order.

6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION-A

1-c.

Printed Page:-04

1. Attempt all parts:-

- 1-a. Smart meter is an example of: (CO1, K1)
 - (a) **Consumer IoT devices**
 - **Enterprise IoT devices** (b)
 - (c) Industrial IoT devices
 - (d) None of these
- This is the component that processes and displays information collected via 1-b. IoT.(CO1, K1)
 - The applications and analytics component (a)
 - The integration component (b)
 - The security and management component (c)
 - None of these (d)

are the characteristics of measuring instruments. (CO2, K1)

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- (a) Sensitivity, readability
- Range of accuracy, precision (b)
- (c) Both 1 and 2
- (d) None of the above

1-d. The direct measurement method categorized into _____(CO2, K1) 1

- (a) One
- Two (b)

Max. Marks: 100

20

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Subject Code:- AME0503

Roll. No:

- (c) Three
- (d) Four

1-e. They can be used as synchronization tools.(CO3, K1)

- (a) Bidirectional Gateways
- (b) Unidirectional Gateways
- (c) Edge computing
- (d) None of these

1-f. How will the edge change organizations' relationship with the cloud? (CO3, K1) 1

- (a) The edge will send more data directly to the cloud.
- (b) Organizations will use the cloud the same way and just add edge computing.
- (c) Edge computing doesn't encourage organizations to stop storing sensitive data in the cloud.

(d) The edge will reduce the amount of data sent to the cloud, potentially saving organizations money.

1-g. The storage device that can be transported is (CO4, K1)

- (a) Diskette/CD's
- (b) Hard disk
- (c) System cabinet
- (d) Main memory
- 1-h. For what type of data the magnetic tapes can be used as good storage media? (CO4, K1)
 - (a) Back up and high volume data
 - (b) Back up and low volume data
 - (c) Original but high volume data
 - (d) Original but low volume data
- 1-i. Which of the following is not a type of cloud deployment: (CO5, K1)
 - (a) Private
 - (b) Public
 - (c) Hybrid
 - (d) Social

1-j. What kind of electronic document contains a public key? (CO5, K1)

- (a) PIN
- (b) Digital certificate
- (c) PAN
- (d) Biometrics
- 2. Attempt all parts:-

2.a. Write any two examples of industrial IoT devices. (CO1, K1)

2.b. What do you mean by direct measurement? (CO2, K1)

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2 2

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What is the main challenge of edge computing? (CO3, K1)	2
What do you mean by prescriptive analytics? (CO4, K1)	2
What is the importance of IIoT? (CO5, K1)	2
<u>N-B</u>	30
er any <u>five</u> of the following:-	
Explain the role and importance of security and management component in IIoT architecture. (CO1, K2)	6
Explain the working of Data Management layer in an IIoT architecture.(CO1, K2)	6
Write Short Notes on: (CO2, K2) (a) Accuracy (b) Precision (c) Sensitivity	6
What do you mean by shear sensor? Explain its working. (CO2, K2)	6
Explain the importance of IoT Video analytics and Quality Control at the edge. (CO3, K2)	6
Describe the various features of diagnostic analytics. (CO4, K2)	6
How can we protect an IIoT system? (CO5, K2)	6
<u>N-C</u>	50
er any <u>one</u> of the following:-	
Write the name of various technologies through which IIoT is enabled. Explain any two of them.(CO1, K2)	10
What are the security considerations and challenges in adopting the IIoT? (CO1, K2)	10
er any <u>one</u> of the following:-	
Explain the working principle of inductive proximity sensor with suitable diagram. (CO2, K2)	10
How does a pressure sensor used for passenger safety in automobile? (CO2, K2)	10
er any <u>one</u> of the following:-	
With the help of suitable examples elaborate how latency and congestion both are the main benefits of edge computing? (CO3, K2)	10
A Gateway is also called as 'Protocol Converter'. Justify this statement with the help of suitable examples.(CO3, K2)	10
er any <u>one</u> of the following:-	
Describe the various layers that hold the one – tier server architecture. What is the importance of these layers for one – tier server architecture.(CO4, K2)	10
What are the various categories of analytics? With the help of suitable example explain any one of them.(CO4, K2)	10
er any <u>one</u> of the following:-	
Describe the role of various innovative IoT tools for the cut down of	10
	 What is the main challenge of edge computing? (CO3, K1) What do you mean by prescriptive analytics? (CO4, K1) What is the importance of IIoT? (CO5, K1) N-B r any five of the following:- Explain the role and importance of security and management component in IIoT architecture. (CO1, K2) Explain the working of Data Management layer in an IIoT architecture. (CO1, K2) Write Short Notes on: (CO2, K2) (a) Accuracy (b) Precision (c) Sensitivity What do you mean by shear sensor? Explain its working. (CO2, K2) Explain the importance of IoT Video analytics and Quality Control at the edge. (CO3, K2) Describe the various features of diagnostic analytics. (CO4, K2) How can we protect an IIoT system? (CO5, K2) N-C r any one of the following:- Write the name of various technologies through which IIoT is enabled. Explain any two of them.(CO1, K2) what are the security considerations and challenges in adopting the IIoT? (CO1, K2) r any one of the following:- Explain the working principle of inductive proximity sensor with suitable diagram. (CO2, K2) r any one of the following:- With the help of suitable examples elaborate how latency and congestion both are the main benefits of edge computing? (CO3, K2) A Gateway is also called as 'Protocol Converter'. Justify this statement with the help of suitable examples.(CO3, K2) r any one of the following:- With the help of suitable examples of analytics? With the help of suitable examples claborate how latency and congestion both are the main benefits of edge computing? (CO3, K2) A Gateway is also called as 'Protocol Converter'. Justify this statement with the help of suitable examples.(CO3, K2) T any one of the following:- What are the various categories of analytics? With the help of suitable example

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environmental and monetary costs for businesses.(CO5, K2)

8-b. Describe the various features of IoT enabled intelligent offices in various companies. Describe its advantages and disadvantages.(CO5, K2)

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