

University of Mumbai

Examination Summer 2022

Program: Electronics and Telecommunication Engineering

Curriculum Scheme: Rev2019

Examination: TE Semester: VI

Course Code: **ECCDLO6015** and Course Name: **IoT and Industry 4.0**

Q1.	How many number of elements in the Open IoT Architecture?
Option A:	3
Option B:	7
Option C:	8
Option D:	6
Q2.	The machine to machine nodes are of how many types
Option A:	1
Option B:	2
Option C:	3
Option D:	4
Q3.	Which one of the following protocols is lightweight
Option A:	IP
Option B:	HTTP
Option C:	MQTT
Option D:	CoAP
Q4.	_____ are used for bidirectional communication and instant messaging and chatting over a single TCP connection
Option A:	Web sockets
Option B:	SOAP
Option C:	HTTP
Option D:	Post
Q5.	A gateway software must be smart enough so that it can handle _____.
Option A:	Sensors
Option B:	Logging
Option C:	Message
Option D:	GPS
Q6.	Adheres to _____ approach for managing resources and support mapping to HTTP
Option A:	Retful
Option B:	IoT
Option C:	SOAP
Option D:	Restful

Q7.	Puppet uses which configuration language
Option A:	Imperative
Option B:	Declarative
Option C:	Ruby
Option D:	Interactive
Q8.	Which of the following is not a component of CHEF
Option A:	Recipe
Option B:	Knife
Option C:	Cookbook
Option D:	Manifest
Q9.	IoT gateway must provide _____
Option A:	Protocol abstraction
Option B:	Data storage
Option C:	Security with hardware
Option D:	Simple and fast installation
Q10.	Gateway provides the connection between _____ and _____.
Option A:	Controller and device
Option B:	Network and Controller
Option C:	Network and Cloud
Option D:	Cloud and Controller
Q11.	Forest Fire detection system is an example of which IoT level
Option A:	Level 1
Option B:	Level 3
Option C:	Level 4
Option D:	Level 5
Q12.	In which system, each component cannot see beyond the immediate layer with which they are interacting?
Option A:	REST
Option B:	Stateless
Option C:	layered
Option D:	Cacheable
Q13.	the technology integration in m2m is
Option A:	Horizontal
Option B:	Vertical
Option C:	Parallel
Option D:	Serial
Q14.	What license is Hadoop distributed under?
Option A:	Apache License 2.0
Option B:	Mozilla Public License
Option C:	Shareware

Option D:	Commercial
Q15.	_____ is a distributed real-time computation system for processing large volumes of high-velocity data.
Option A:	Kafka
Option B:	Storm
Option C:	Lucene
Option D:	Bigtop
Q16.	Oozie can make _____ callback notifications on action start events and workflow end events.
Option A:	TCP
Option B:	HTTP
Option C:	IP
Option D:	REST
Q17.	IoT life cycle is Collect>communicate>_____>act
Option A:	Examine
Option B:	Analyse
Option C:	Rectify
Option D:	Acknowledge
Q18.	What is the role of Big Data in IoT's Smart Grid architecture?
Option A:	Filter data
Option B:	Store data
Option C:	Collect data
Option D:	Security
Q19.	Who coined the term "Internet of Things"?
Option A:	Kevin Aston
Option B:	John Wright
Option C:	Edward Jameson
Option D:	George Garton
Q20.	MQTT stands for
Option A:	MQ Telemetry Things
Option B:	MQ Transport Telemetry
Option C:	MQ Transport Things
Option D:	MQ Telemetry Transport
Q21.	The First Industrial Revolution was brought in by what technology?
Option A:	Steam Power
Option B:	Electricity and Mass Production

Option C:	Computers and Semiconductors
Option D:	Agrarian Riots and Starvation
Q22.	In the Digital Age (3rd Industrial Revolution) what two major inventions changed production and paved the way to Automation
Option A:	Model Control Systems
Option B:	Switches and Relays
Option C:	Programmable Logic Controllers (PLC) and Robots
Option D:	Process Automation
Q23.	The Internet of Things (IoT), access to real-time data, and the introduction of cyber-physical systems mark the big changes for this era
Option A:	3rd Industrial Revolution
Option B:	Industry 4.0
Option C:	Manufacturing Age
Option D:	Industrial Revolution
Q24.	The second level in the traditional automation pyramid is
Option A:	ERP
Option B:	Manufacturing Execution System (MES)
Option C:	Process Level Control
Option D:	Production Level
Q25.	Which of the following is NOT one of the IIRA viewpoint?
Option A:	Business Viewpoint
Option B:	Usage Viewpoint
Option C:	Functional Viewpoint
Option D:	Critical View point
Q26.	In which year was the term Industry 4.0 first introduced?
Option A:	2009
Option B:	2010
Option C:	2011
Option D:	2012
Q27.	What does CPS stand for?
Option A:	Cyber Physical System
Option B:	Cyclic Physical System
Option C:	Cyber Physical Sequence
Option D:	Computer-Physiological System
Q28.	What does iRobot-Factory enforce to improve its manufacturing process?
Option A:	Cognitive intelligence
Option B:	Managerial intelligence
Option C:	Logistic intelligence
Option D:	Materialistic Intelligence
Q29.	Industry 5.0 is based on which technology
Option A:	Machinery
Option B:	Steam

Option C:	Internet
Option D:	Equal global trade potential
Q30.	The _____ comprises the whole pack of benefits the firm promises to deliver.
Option A:	Value proposition
Option B:	Value creation
Option C:	Value delivery
Option D:	Value supposition
Q31.	The _____ is a tool for identifying ways to create
Option A:	value chain
Option B:	customer survey
Option C:	brand loyalty index
Option D:	promotion channel
Q32.	Which of the following is the future application of IoT?
Option A:	Secure Communication
Option B:	Multimedia Communication
Option C:	Role of green IoT system
Option D:	QoS communication
Q33.	A smart product is....
Option A:	a product that is very clever
Option B:	a product that can talk in several languages
Option C:	a product that can respond to changes in its environment
Option D:	a product that is analogue
Q34.	What are the outcomes of the profound and systematic change of the fourth industrial revolution?
Option A:	Producing objects that are mutable and adaptable
Option B:	Producing objects that are adaptable
Option C:	Producing objects that are mutable
Option D:	Producing objects that are flexible
Q35.	Which country government introduced the Industry 4.0 concept?
Option A:	USA
Option B:	France
Option C:	Germany
Option D:	Great Britain
Q36.	IIoT stands for _____
Option A:	Internal Internet of Things
Option B:	Intelligent Internet of Things
Option C:	Internet Internet of Things
Option D:	Industrial Internet of Things

Q37.	What are advantages of Industry 4.0
Option A:	Improved Productivity & Efficiency
Option B:	Low cost of implementation
Option C:	Creating more vacancies for workers
Option D:	No risk of hacking into internal network
Q38.	PLC is abbreviated as
Option A:	Performance logic computer
Option B:	Performance logic controller
Option C:	Programmable logic controller
Option D:	Programmable logic computer
Q39.	Which of the following is not a driver of Industry 4.0?
Option A:	There is more data accessible.
Option B:	The processing of information is much faster.
Option C:	New materials allow lighter products.
Option D:	The algorithms for forecasting and optimisation are better than two decades before.
Q40.	What was Hadoop named after?
Option A:	Creator Doug Cutting's favorite circus act
Option B:	Cutting's high school rock band
Option C:	The toy elephant of Cutting's son
Option D:	A sound Cutting's laptop made during Hadoop development

5 marks questions

1. What are the differences between machines in M2M and things in IoT?
2. State and explain IoT Characteristics
3. Draw deployment model of Puppet and explain key concepts of it.
4. Explain with a diagram the components of Apache Storm.
5. With a neat sketch, explain the request-response communication model of IoT.
6. With a neat sketch, explain the push-pull communication model of IoT.
7. With the help of neat diagrams, explain the M2M system architecture.
8. Differentiate NETCONF and YANG.
9. Compare Puppet and Chef tool.
10. Explain in detail about the need of IoT management tools
11. What are the features of REST architectural style?
12. List the features of MQTT.
13. How is XMPP used for IoT applications?
14. Compare IPv4 & IPv6
15. Compare HTTP & CoAP
16. Explain and illustrate usage viewpoint in detail.
17. Explain in detail about the Industrial internet architecture framework.
18. Discuss about Business and implementation viewpoints in detail.
19. Write a short note on Functional Blocks of IoT
20. Explain features of Value creation using IoT
- 21 Write short note on Apache Storm
- 22 What is HDFS

23. Write a short note on Virtual reality & Augmented Reality
24. Explain how Artificial Intelligence is important in industry 4.0
25. Explain how Cyber security aspects are important in industry 4.0
26. Explain how internet connectivity is important in IoT
27. Demonstrate with a neat diagram the setting up a Hadoop
28. Demonstrate with a neat diagram the setting up apache storm cluster with Chef.
29. Design a weather monitoring IoT system using REST based?
30. Define Domain model specifications for the Intrusion Detection system

10 marks questions

1. With the help of neat diagrams, describe the levels of IoT with an example each
2. With the help of neat diagrams, explain the M2M system architecture.
3. Describe how smart Irrigation IoT System with NETCONF- YANG
4. Write detailed note on Managing Home Intrusion Detection IoT with NETCONF-YANG
5. Specify functions of CoAP, RESTful HTTP, MQTT and XMPP (Extensible Messaging and Presence Protocol) in IoT apps.
6. What are the functions of HTTP, HTTPS, FTP, Telnet, CoAP and LWM2M ports?
7. Explain in detail the architecture of Industrial Internet of Things.
8. Write a short note on Industry 5.0
9. Explain 5 layered architecture of IIoT
- 10 Explain the business model and reference architecture for Industry 4.0
- 11 What is Chef? Draw and explain the components of Chef framework
- 12 What is Puppet? Draw and explain the components of Puppet framework

13. Draw block diagram of communication between client and server using REST APIs and explain REST architectural constraints. Explain how interactions happen in request-response model used by REST with diagram
14. Explain key highlights , benefits & Concerns about I5.0
15. What are features in WebSocket that enable extensibility to cloud services, support from intelligent and business analyst applications, and support from business processing?
16. Explain with example MQTT Protocol. What is role of MQTT protocol in IoT?
17. Define IoT and M2M. State the Characteristics of IoT and M2M and Illustrate the difference between IoT and M2M.
18. What is role of Cloud Computing and Big Data in Internet of Things?
19. Write a note on Hadoop Map Reduce for big Data analysis
- 20 Write a note on Value proposition in IoT

Question	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	B
Q2.	C
Q3.	C
Q4	A
Q5	B
Q6	D
Q7	B
Q8.	D
Q9.	A
Q10.	D
Q11.	D
Q12.	C
Q13.	B
Q14.	A
Q15.	B
Q16.	B
Q17.	B
Q18.	B
Q19.	A
Q20.	D
Q21.	A
Q22.	C
Q23.	B
Q24.	B
Q25.	B

Q26.	C
Q27.	A
Q28.	A
Q29.	D
Q30.	A
Q31.	A
Q32.	C
Q33.	C
Q34.	A
Q35.	C
Q36.	D
Q37.	A
Q38.	C
Q39.	C
Q40.	C