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SASURIE INSTITUTIONS

SASURIE COLLEGE OF ENGINEERING

Approved by AICTE, New Delhi. Affiliated to Anna University, Chennai

Near NH544, Coimbatore Bypass, Near Vijayamangalam Tollgate,Tirupur 638056

NAAC DOCUMENTS

QUALITY INDICATOR FRAME WORK

CRITERION - 1

CURRICULAR ASPECTS

SUBMITTED BY

IQAC

INTERNAL QUALITY ASSURANCE CELL

SASURIE COLLEGE OF ENGINEERING

SASURIE COLLEGE OF ENGINEERING
Vijayamangalam, Tiruppur.

1.2 AcademicFlexibility(30)

1.2.1 Number of Certificate/Value added courses offered and online courses of MOOCs, SWAYAM, NPTEL etc. (where the students of the institution have enrolled and successfully completed during the last five years)

AND

1.2.2 Percentage of students enrolled in Certificate/ Value added courses and also completed online courses of MOOCs, SWAYAM, NPTEL etc. as against the total number of students during the last five years

VAC Title:	**SMART SENSORS AND ACTUATORS FOR INDUSTRIAL AUTOMATION**				
Resource Person:	Subha, Trainer, Infoziant Systems Pvt Ltd, Chennai.		Mr. Tony, Manager, Infoziant Systems Pvt Ltd, Chennai.		
Dat e of conduct from:	**24.06.2019**	**To:**	**28.06.2019**	**Duration:**	**30 Hours**
Organized Department:	**ELECTRICAL AND ELECTRONICS ENGINEERING**				
Participant Year:	**2/3/4**	**Semester:**	**ODD**	**No. of Students Registered:**	**36**
Venue:	**Lecture hall of II & III year EEE**				

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SASURIE INSTITUTIONS

SASURIE COLLEGE OF ENGINEERING

Approved by AICTE, New Delhi
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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Ref: SCE / EEE /Students / VAC / 2019 – 2020 / ODD 17.06.2019

CIRCULAR

In order to bridge the curricular gap between the Academic Syllabus and Industry requirements, Department of Electrical and Electronics Engineering and IQAC of our Institution in association with Infoziant Systems Pvt Ltd, is organizing a **Value Added Course (VAC)** for the students of II, III and IV year of EEE on the title **"Smart sensors and actuators for industrial automation"** from **24.06.2019** to **28.06.2019**. At the end of the VAC, course completion certificates will be issued to the eligible participants as per the following norms.

- Students, who are securing **more than 70% on total score in the VAC test** and secured more than 75% in VAC attendance is eligible to receive the course completion certificate for the VAC attended.

Resource Person Details	Subha, Trainer, Infoziant Systems Pvt Ltd, Chennai.	Mr. Tony, Manager, Infoziant Systems Pvt Ltd, Chennai.
Venue	**Lecture hall of II & III year EEE**	

HoD/EEE

PRINCIPAL

Copy to:

1. Chairman & Secretary for information
2. Principal office
3. IQAC Co-Ordinator
4. Class In charges - II, III & IV-Year EEE
5. II, III & IV-Year EEE Students
6. EEE Notice Board
7. Department File

Dr.M.VIJAYAKUMAR ME., Ph.D.,
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Ref: SCE / EEE /Students / VAC / 2019 – 2020 / ODD 17.06.2019

SYLLABUS - VALUE ADDED COURSE

"Smart sensors and actuators for industrial automation"

From 24.06.2019 to 28.06.2019 (5 days)

Duration : 30 Hours **Academic Year : 2019 -2020 / ODD**

S.No.	Topics Covered	Duration (In Hours)	Date
1	Introduction to Industrial Automation	3	24.06.2019
2	Basics of Sensors and Actuators	3	24.06.2019
3	Smart Sensor Technologies	3	25.06.2019
4	Actuator Control Systems	3	25.06.2019
5	Communication Protocols	3	26.06.2019
6	Industrial Internet of Things (IIoT)	3	26.06.2019
7	Machine Learning in Automation	3	27.06.2019
8	Cybersecurity in Industrial Automation	3	27.06.2019
9	Energy Efficiency and Sustainability	3	28.06.2019
10	Case Studies and Practical Applications	3	28.06.2019
	Total Hours	30	-

After successful completion of 30 Hours VAC, the assessment test for the VAC titled "Smart sensors and actuators for industrial automation" will be conducted on 28.06.2019.

VAC Coordinator

HoD/EEE

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

STUDENTS PARTICIPATION LIST - VALUE ADDED COURSE

"Smart sensors and actuators for industrial automation"

From 24.06.2019 to 28.06.2019 (5 days)

Duration : 30 Hours **Academic Year : 2019 -2020 / ODD**

S.No.	Reg No.	Name of the Student	Year / Branch
1.	732418105002	JAYAPRIYA R	II/EEE
2.	732417105002	ANJANA S	III/EEE
3.	732417105004	BARANIDHARAN P	III/EEE
4.	732417105006	KALEESWARAN P	III/EEE
5.	732417105007	KEERTHANA G	III/EEE
6.	732417105008	MALATHI S R	III/EEE
7.	732417105009	MARIA AROCKIYAM D	III/EEE
8.	732417105010	PRAKASH M	III/EEE
9.	732417105011	RAMESH KUMAR T	III/EEE
10.	732417105012	SATHISHKUMAR R	III/EEE
11.	732417105013	SIDHUMADHAVAN A	III/EEE
12.	732417105014	SHANMUGAM S	III/EEE
13.	732417105015	SOUNDARYA T	III/EEE
14.	732417105016	SREEVENI S	III/EEE
15.	732417105019	VIGNESH S	III/EEE
16.	732417105701	SEVVANDHI D	III/EEE
17.	732417105702	RANJITH C	III/EEE
18.	732416105001	AMSAVENI S	IV/EEE
19.	732416105002	ARIHARAN P	IV/EEE
20.	732416105003	BASKAR S	IV/EEE
21.	732416105004	BOOPATHI S	IV/EEE
22.	732416105005	DHARANI D	IV/EEE
23.	732416105006	HARISH D	IV/EEE
24.	732416105007	KALAIALAHAR K S	IV/EEE
25.	732416105009	KARTHIKEYAN V	IV/EEE
26.	732416105010	KIRUBHAKARAN R	IV/EEE
27.	732416105011	NAVEENKUMAR M	IV/EEE
28.	732416105012	NAVEENKUMAR R	IV/EEE
29.	732416105013	PAVITHRA M	IV/EEE
30.	732416105014	RAJESHKUMAR M	IV/EEE

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STUDENTS PARTICIPATION LIST - VALUE ADDED COURSE

S.No.	Reg No.	Name of the Student	Year / Branch
31.	732416105015	TAMILSELVAM G	IV/EEE
32.	732416105016	VANMATHI P	IV/EEE
33.	732416105017	VIDHYA V	IV/EEE
34.	732416105301	AJITH M	IV/EEE
35.	732416105302	GUNASEKARAN S	IV/EEE
36.	732416105501	CHANDHRAKUMAR M	IV/EEE

VAC Coordinator

HoD/EEE

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

STUDENTS ATTENDANCE LIST - VALUE ADDED COURSE

"Smart Sensors and Actuators for Industrial Automation"

From 24.06.2019 to 28.06.2019 (5 days)

Duration : 30 Hours **Academic Year : 2019 -2020/ ODD**

S.No	Reg No.	Name of the Student	Year/ Branch	24.06.2019		25.06.2019		26.06.2019		27.06.2019		28.06.2019		No. of Hours Attended	Signature of the Student
				FN	AN	FN	AN	FN	AN	FN	AN	FN	AN		
1.	732418105002	JAYAPRIYA R	II/EEE	a	/	/	/	/	/	/	/	/	/	27	
2.	732417105002	ANJANA S	III/EEE	/	/	/	a	/	/	/	/	/	/	27	
3.	732417105004	BARANIDHARAN P	III/EEE	/	/	/	/	/	/	/	/	/	/	30	
4.	732417105006	KALEESWARAN P	III/EEE	/	/	/	a	/	/	/	/	/	/	27	
5.	732417105007	KEERTHANA G	III/EEE	/	/	/	/	a	a	/	/	/	/	24	
6.	732417105008	MALATHI S R	III/EEE	/	/	/	/	a	/	/	/	/	/	30	
7.	732417105009	MARIA AROCKIYAM D	III/EEE	/	/	/	/	a	a	/	/	/	/	24	
8.	732417105010	PRAKASH M	III/EEE	/	/	/	/	/	/	/	/	/	/	30	
9.	732417105011	RAMESH KUMAR T	III/EEE	/	/	/	/	/	/	/	/	/	/	30	
10.	732417105012	SATHISHKUMAR R	III/EEE	/	/	/	/	/	/	/	/	/	/	30	
11.	732417105013	SEDHUMADHAVAN A	III/EEE	/	/	/	/	a	/	/	/	/	/	27	
12.	732417105014	SHANMUGAM S	III/EEE	/	/	/	/	/	/	/	/	/	/	30	
13.	732417105015	SOUNDARYA T	III/EEE	/	/	/	/	/	/	a	a	/	/	24	

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				FN	AN	FN	AN	FN	AN	FN	AN	FN	AN		
14.	732417105016	SREEVENI S	III/EEE	1	a	1	1	1	1	1	1	1	1	27	S Sreevani
15.	732417105019	VIGNESH S	III/EEE	1	1	1	1	1	1	1	1	1	1	30	Vigneshs
16.	732417105701	SEVVANDHI D	III/EEE	1	1	1	1	1	1	1	1	1	1	30	D.Sevvandhi
17.	732417105702	RANJITH C	III/EEE	1	1	1	1	1	1	1	1	1	1	30	CRANJITH
18.	732416105001	AMSAVENI S	IV/EEE	1	1	a	a	1	1	1	1	1	1	24	S.Amsaveni
19.	732416105002	ARIHARAN P	IV/EEE	1	1	1	1	1	a	1	1	1	1	27	P. Ariharan
20.	732416105003	BASKAR S	IV/EEE	1	1	1	1	1	1	1	1	1	1	30	S.BaskR
21.	732416105004	BOOPATHI S	IV/EEE	1	1	1	1	1	1	a	1	1	1	27	S.Boopathi
22.	732416105005	DHARANI D	IV/EEE	1	1	1	1	1	1	1	1	1	1	30	D Dharani
23.	732416105006	HARISH D	IV/EEE	1	1	1	1	1	1	1	a	1	1	27	D.Harish.
24.	732416105007	KALLALAHAR K S	IV/EEE	1	1	1	1	1	1	1	1	1	1	30	K. Karthikeya
25.	732416105009	KARTHIKEYAN V	IV/EEE	1	1	1	1	a	a	1	1	1	1	24	V. Karthikeyan
26.	732416105010	KIRUBHAKARAN R	IV/EEE	1	1	a	1	1	1	1	1	1	1	27	R. Kirubakaran
27.	732416105011	NAVEENKUMAR M	IV/EEE	1	1	1	1	a	1	a	1	1	1	24	M Naveenkumar
28.	732416105012	NAVEENKUMAR R	IV/EEE	1	1	1	1	1	1	1	1	1	1	30	M Pavithra
29.	732416105013	PAVITHRA M	IV/EEE	1	1	1	1	1	a	a	1	1	1	24	M. Pavithra
30	732416105014	RAJESHKUMAR M	IV/EEE	1	1	1	1	1	1	1	1	1	1	30	M Rajesh Kumar
31	732416105015	TAMILSELVAM G	IV/EEE	a	a	1	1	1	1	1	1	1	1	24	G. Tamilselvam
32.	732416105016	VANMATHI P	IV/EEE	1	1	1	a	1	1	1	1	1	1	27	P. Vanmathi

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S.No	Reg No.	Name of the Student	Year/ Branch	24.06.2019		25.06.2019		26.06.2019		27.06.2019		28.06.2019		No. of Hours Attended	Signature of the Student
				FN	AN	FN	AN	FN	AN	FN	AN	FN	AN		
33.	732416105017	VIDHYA V	IV/EEE	/	/	/	/	/	/	/	a	/	/	27	V. Vidhya
34.	732416105301	AJITH M	IV/EEE	/	/	/	/	a	a	/	/	/	/	24	Ajith.M
35.	732416105302	GUNASEKARAN S	IV/EEE	/	/	a	a	/	/	/	/	/	/	24	
36.	732416105501	CHANDHRAKUMAR M	IV/EEE	/	/	/	/	/	/	/	/	/	/	30	M. Chandru

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VAC Coordinator

HoD/EEE

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Report on Value Added Course

Title:	**Smart sensors and actuators for industrial automation**				
Resource Person:	**Subha, Trainer, Infoziant Systems Pvt Ltd, Chennai.**		**Mr. Tony, Manager, Infoziant Systems Pvt Ltd, Chennai.**		
Date of conduct from :	**24.06.2019**	To:	**28.06.2019**	Duration:	**30 Hours**
Organized by :	**ELECTRICAL AND ELECTRONICS ENGINEERING and IQAC in association with Infoziant Systems Pvt Ltd**				
Academic Year:	**2019 – 2020**		Semester:		**ODD**
Participant Year:	**II, III, IV Year EEE**		No. of Students Participated :		36
Venue:	**Lecture hall of II & III year EEE**				

Outcome of Value Added Course (VAC)

At the end of the Course, Students can be able to

- Understanding of the principles and significance of industrial automation, including its evolution from traditional to smart automation.
- Ability to identify and choose appropriate sensor and actuator types for different industrial applications.
- Utilize communication protocols for smart sensors and actuators, enabling them to design and implement robust industrial automation systems.
- Understanding of IIoT concepts and their application in industrial automation.
- Optimize energy consumption in automated industrial processes, leveraging smart sensors and actuators to promote sustainability.

Assessment Process

- Students, who are securing **more than 70% on total score in the VAC test** and secured more than 75% in VAC attendance is eligible to receive the course completion certificate for the VAC attended
- Total Score = (0.5 *Attendance in VAC out of 100 percentage + 0.5 *Test mark in VAC out of 100 marks)

No. of students successfully completed the VAC course is **36 Students** based on the above assessment process.

VAC Co-ordinator | **HoD/ EEE** | **Principal**

Dr.M.VIJAYAKUMAR ME., Ph.D.,
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SASURIE
COLLEGE OF ENGINEERING

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Certificate of Participation

This is to certify that Mr./Ms HARISH.D IV/EEE has successfully completed the Value Added Course titled "Smart Sensors and Actuators for Industrial Automation" by the *Department of Electrical and Electronics Engineering* in association with IQAC of Sasurie College of Engineering and Infoziant systems Pvt Ltd from 24.03.2019 to 28.06.2019(6 Days).

Co-ordinator

Head of the Department

Principal

Dr.M.VIJAYAKUMAR ME., Ph.D.,
PRINCIPAL
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COLLEGE OF ENGINEERING

DEPARTMENT OF OF ELECTRICAL AND ELECTRONICS ENGINEERING

Certificate of Participation

This is to certify that Mr./Ms BOOPATHI.S IV/EEE has successfully completed the Value Added Course titled "Smart Sensors and Actuators for Industrial Automation" Organized by the *Department of Electrical and Electronics Engineering* in association with IQAC of Sasurie College of Engineering and Infoziant systems Pvt Ltd from 24.06.2019 to 28.06.2019(5 Days).

Co-ordinator

Head of the Department

Principal

Dr.M.VIJAYAKUMAR ME., Ph.D.,
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Vijayamangalam, Tiruppur.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Certificate of Participation

This is to certify that **Mr./Ms** MALATHI S R III/EEE has successfully completed the **Value Added Course** titled "**Smart Sensors and Actuators for Industrial Automation**" by the ***Department of Electrical and Electronics Engineering*** **in association with IQAC of Sasurie College of Engineering and Infozient systems pvt ltd.** from **24.06.2019 to 28.06.2019** (6 Days).

Co-ordinator

Head of the Department

Principal

Dr.M.VIJAYAKUMAR ME., Ph.D.,
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SASURIE
COLLEGE OF ENGINEERING

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Certificate of Participation

This is to certify that Mr./Ms KEERTHANA.G III/EEE has successfully completed the **Value Added Course** titled "Smart Sensors and Actuators for Industrial Automation" by the *Department of Electrical and Electronics Engineering* in association with IQAC of Sasurie College of Engineering and Infoziant systems **Pvt ltd.** from **24.06.2019** to **28.06.2019** (6 Days).

Co-ordinator **Head of the Department** **Principal**

Dr.M.VIJAYAKUMAR ME., Ph.D.,
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SASURIE COLLEGE OF ENGINEERING

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Certificate of Participation

This is to certify that Mr./Ms. JAYAPRIYA R. II EEE has successfully completed the Value added Course titled "Smart sensors and actuators for industrial automation" by the *Department of Electrical and Electronics Engineering* in association with IQAC of Sasurie College of Engineering and Infozian systems Pvt. Ltd from 24.06.2024 to 28.06.2024 (5 Days).

Co-ordinator

Head of the Department

Principal

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

TEST QUESTION PAPER - VALUE ADDED COURSE

"Smart sensors and actuators for industrial automation"

From 24.06.2019 to 28.06.2019 (5 days)

Duration : 30 Hours **Academic Year : 2019 -2020 / ODD**

Date of Test : 28.06.2019

MULTIPLE CHOICE QUESTIONS (25 X 1 = 25 Marks)

Name of the Student: **Year/Sem:**

AU Register Number:

Answer all the questions:

1. What is the primary purpose of industrial automation?
   a) Cost reduction
   b) Increased productivity
   c) Both a and b
   d) None of the above

2. Which of the following is a type of smart sensor commonly used in industrial automation?
   a) Passive sensor
   b) RFID sensor
   c) Analog sensor
   d) Mechanical sensor

3. What is the function of an actuator in an industrial automation system?
   a) Sensing environmental changes
   b) Initiating actions in response to signals
   c) Processing data
   d) None of the above

4. Which communication protocol is commonly used for IoT-enabled sensors in industrial automation?
   a) USB
   b) Bluetooth
   c) MQTT
   d) HDMI

5. What is the role of IIoT in industrial automation?
   a) Improving communication between devices
   b) Enhancing security
   c) Optimizing energy efficiency
   d) All of the above

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6. What is the purpose of machine learning in industrial automation?
   a) Predictive maintenance
   b) Data storage
   c) Physical control of actuators
   d) None of the above

7. Which security challenge is associated with smart sensor and actuator networks?
   a) Energy consumption
   b) Interoperability
   c) Cybersecurity threats
   d) Signal processing

8. What is OPC UA in the context of industrial automation?
   a) Object-Process Control Unified Architecture
   b) Overhead Power Cable for Unified Automation
   c) Open Platform Communication Unified Architecture
   d) None of the above

9. What is the primary goal of optimizing energy consumption in industrial automation?
   a) Maximizing energy usage
   b) Minimizing energy waste
   c) Balancing energy levels
   d) None of the above

10. Which type of sensor is commonly used for real-time monitoring in industrial automation?
   a) Temperature sensor
   b) Vision sensor
   c) Proximity sensor
   d) Sound sensor

11. What does RFID stand for in the context of sensors?
   a) Radio Frequency Identification
   b) Rapid Frequency Integration Device
   c) Remote Field Identification
   d) None of the above

12. In the context of actuators, what does "adaptive control" refer to?
   a) Real-time adjustment of control parameters
   b) Static control mechanisms
   c) On/Off control
   d) None of the above

13. Which technology is associated with the concept of predictive maintenance?
   a) Machine learning
   b) Robotics
   c) Nanotechnology
   d) Quantum computing

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14. What is the primary concern addressed by cybersecurity measures in industrial automation?
   a) Physical safety
   b) Environmental impact
   c) Data and network security
   d) All of the above

15. Which of the following is an example of a standardized communication protocol for industrial automation?
   a) HTTP
   b) SMTP
   c) OPC UA
   d) FTP

16. What is the main advantage of using vision sensors in industrial automation?
   a) Accurate distance measurement
   b) Identification of visual patterns
   c) Temperature sensing
   d) None of the above

17. What role does actuators play in the feedback loop of a control system?
   a) Sensing
   b) Processing
   c) Executing actions
   d) None of the above

18. Which sensor type is commonly used for detecting the presence or absence of an object without physical contact?
   a) Proximity sensor
   b) Temperature sensor
   c) Pressure sensor
   d) Humidity sensor

19. What is the primary objective of implementing IIoT solutions in industrial automation?
   a) Enhancing product aesthetics
   b) Reducing production costs
   c) Improving worker morale
   d) All of the above

20. Which term refers to the ability of different devices and systems to work together seamlessly?
   a) Automation
   b) Interoperability
   c) Adaptability
   d) Integration

21. How do smart sensors contribute to predictive maintenance?
   a) By initiating actions in real-time
   b) By monitoring and analyzing data for potential issues
   c) By controlling actuators remotely
   d) None of the above

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Vijayamangalam - 638 056, Tirupur (Dt).

22. Which factor is NOT a consideration in optimizing energy consumption in industrial automation?
a) Maximizing productivity
b) Minimizing environmental impact
c) Reducing operational costs
d) Maximizing energy waste

23. What is the primary function of a proximity sensor in industrial automation?
a) Monitoring temperature
b) Detecting the presence or absence of an object
c) Analyzing visual patterns
d) None of the above

24. How does machine learning contribute to adaptive control in industrial automation?
a) By providing real-time feedback
b) By adjusting control parameters based on historical data
c) By analyzing visual patterns
d) None of the above

25. What is the primary purpose of using cybersecurity measures in smart sensor and actuator networks?
a) Enhancing communication speed
b) Protecting against cyber threats and unauthorized access
c) Optimizing energy efficiency
d) None of the above

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

TEST QUESTION ANSWER KEY - VALUE ADDED COURSE

"Smart sensors and actuators for industrial automation"

From 24.06.2019 to 28.06.2019 (5 days)

Duration : 30 Hours **Academic Year : 2019 -2020 / ODD**

Date of Test : 28.06.2019

a	c	6	a	11	a	16	b	21	b
2	b	7	c	12	a	17	c	22	d
3	b	8	c	13	a	18	a	23	b
4	c	9	b	14	c	19	b	24	b
5	d	10	b	15	c	20	b	25	b

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TEST QUESTION PAPER - VALUE ADDED COURSE

"Smart sensors and actuators for industrial automation"

From 24.06.2019 to 28.06.2019 (5 days)

Duration : 30 Hours **Academic Year : 2019 -2020 / ODD**

Date of Test : 28.06.2019

MULTIPLE CHOICE QUESTIONS (25 X 1 = 25 Marks)

Name of the Student: Jayapriya - R **Year/Sem:** IV / VII

AU Register Number: 732418105002

Answer all the questions:

1. What is the primary purpose of industrial automation?
   a) Cost reduction
   b) Increased productivity
   c) Both a and b
   d) None of the above

2. Which of the following is a type of smart sensor commonly used in industrial automation?
   a) Passive sensor
   b) RFID sensor
   c) Analog sensor
   d) Mechanical sensor

3. What is the function of an actuator in an industrial automation system?
   a) Sensing environmental changes
   b) Initiating actions in response to signals
   c) Processing data
   d) None of the above

4. Which communication protocol is commonly used for IoT-enabled sensors in industrial automation?
   a) USB
   b) Bluetooth
   c) MQTT
   d) HDMI

5. What is the role of IIoT in industrial automation?
   a) Improving communication between devices
   b) Enhancing security
   c) Optimizing energy efficiency
   d) All of the above

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6. What is the purpose of machine learning in industrial automation?
   a) Predictive maintenance
   b) Data storage
   c) Physical control of actuators
   d) None of the above

7. Which security challenge is associated with smart sensor and actuator networks?
   a) Energy consumption
   b) Interoperability
   c) Cybersecurity threats
   d) Signal processing

8. What is OPC UA in the context of industrial automation?
   a) Object-Process Control Unified Architecture
   b) Overhead Power Cable for Unified Automation
   c) Open Platform Communication Unified Architecture
   d) None of the above

9. What is the primary goal of optimizing energy consumption in industrial automation?
   a) Maximizing energy usage
   b) Minimizing energy waste
   c) Balancing energy levels
   d) None of the above

10. Which type of sensor is commonly used for real-time monitoring in industrial automation?
   a) Temperature sensor
   b) Vision sensor
   c) Proximity sensor
   d) Sound sensor

11. What does RFID stand for in the context of sensors?
   a) Radio Frequency Identification
   b) Rapid Frequency Integration Device
   c) Remote Field Identification
   d) None of the above

12. In the context of actuators, what does "adaptive control" refer to?
   a) Real-time adjustment of control parameters
   b) Static control mechanisms
   c) On/Off control
   d) None of the above

13. Which technology is associated with the concept of predictive maintenance?
   a) Machine learning
   b) Robotics
   c) Nanotechnology
   d) Quantum computing

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14. What is the primary concern addressed by cybersecurity measures in industrial automation?
a) Physical safety
b) Environmental impact
c) Data and network security
d) All of the above

15. Which of the following is an example of a standardized communication protocol for industrial automation?
a) HTTP
b) SMTP
c) OPC UA
d) FTP

16. What is the main advantage of using vision sensors in industrial automation?
a) Accurate distance measurement
b) Identification of visual patterns
c) Temperature sensing
d) None of the above

17. What role does actuators play in the feedback loop of a control system?
a) Sensing
b) Processing
c) Executing actions
d) None of the above

18. Which sensor type is commonly used for detecting the presence or absence of an object without physical contact?
a) Proximity sensor
b) Temperature sensor
c) Pressure sensor
d) Humidity sensor

19. What is the primary objective of implementing IIoT solutions in industrial automation?
a) Enhancing product aesthetics
b) Reducing production costs
c) Improving worker morale
d) All of the above

20. Which term refers to the ability of different devices and systems to work together seamlessly?
a) Automation
b) Interoperability
c) Adaptability
d) Integration

21. How do smart sensors contribute to predictive maintenance?
a) By initiating actions in real-time
b) By monitoring and analyzing data for potential issues
c) By controlling actuators remotely
d) None of the above

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22. Which factor is NOT a consideration in optimizing energy consumption in industrial automation?
a) Maximizing productivity
b) Minimizing environmental impact
c) Reducing operational costs
d) Maximizing energy waste

23. What is the primary function of a proximity sensor in industrial automation?
a) Monitoring temperature
b) Detecting the presence or absence of an object
c) Analyzing visual patterns
d) None of the above

24. How does machine learning contribute to adaptive control in industrial automation?
a) By providing real-time feedback
b) By adjusting control parameters based on historical data
c) By analyzing visual patterns
d) None of the above

25. What is the primary purpose of using cybersecurity measures in smart sensor and actuator networks?
a) Enhancing communication speed
b) Protecting against cyber threats and unauthorized access
c) Optimizing energy efficiency
d) None of the above

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S.No	Reg No.	Name of the Student	Year/ Branch	Attendance Details		VAC-MCQ TEST		OVERALL Score (100) (50% of A + 50% of B)
				No. of Hours Attended	Attendance Score (100) (A)	No. of Correct Answers	MCQ Score (100) (B)	
1.	732418105002	JAYAPRIYA R	II/EEE	27	90	19	76	83
2.	732417105002	ANJANA S	III/EEE	27	90	19	76	83
3.	732417105004	BARANIDHARAN P	III/EEE	30	100	19	76	88
4.	732417105006	KALEESWARAN P	III/EEE	27	90	19	76	83
5.	732417105007	KEERTHANA G	III/EEE	24	80	21	84	82
6.	732417105008	MALATHI S R	III/EEE	30	100	18	72	86
7.	732417105009	MARIA AROCKIYAM D	III/EEE	24	80	20	80	80
8.	732417105010	PRAKASH M	III/EEE	30	100	19	76	88
9.	732417105011	RAMESH KUMAR T	III/EEE	30	100	19	76	88
10.	732417105012	SATHISHKUMAR R	III/EEE	30	100	18	72	86
11.	732417105013	SEDHUMADHAVAN A	III/EEE	27	90	19	76	83
12.	732417105014	SHANMUGAM S	III/EEE	30	100	19	76	88
13.	732417105015	SOUNDARYA T	III/EEE	24	80	20	80	80

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				No of Hours Attended	Attendance Score(100) (A)	No. of Correct Answers	MCQ Score (100) (B)	
14	732417105016	SREEVENI S	III/EEE	27	90	19	76	83
15	732417105019	VIGNESH S	III/EEE	30	100	20	80	90
16	732417105701	SEVVANDHI D	III/EEE	30	100	19	76	88
17	732417105702	RANJITH C	III/EEE	30	100	19	76	88
18	732416105001	AMSAVENI S	IV/EEE	24	80	21	84	82
19	732416105002	ARIHARAN P	IV/EEE	27	90	18	72	81
20	732416105003	BASKAR S	IV/EEE	30	100	21	84	92
21	732416105004	BOOPATHI S	IV/EEE	27	90	19	76	83
22	732416105005	DHARANI D	IV/EEE	30	100	19	76	88
23	732416105006	HARISH D	IV/EEE	27	90	19	76	83
24	732416105007	KALLALAHAR K S	IV/EEE	30	100	20	80	90
25	732416105009	KARTHIKEYAN V	IV/EEE	24	80	21	84	82
26	732416105010	KIRUBHAKARAN R	IV/EEE	27	90	19	76	83
27	732416105011	NAVEENKUMAR M	IV/EEE	24	80	21	84	82
28	732416105012	NAVEENKUMAR R	IV/EEE	30	100	21	84	92
29	732416105013	PAVITHRA M	IV/EEE	24	80	20	80	80
30	732416105014	RAJESHKUMAR M	IV/EEE	30	100	19	76	88
31	732416105015	TAMILSELVAM G	IV/EEE	24	80	20	80	80
32	732416105016	VANMATHI P	IV/EEE	27	90	19	76	83

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				No. of Hours Attended	Attendance Score (100) (A)	No. of Correct Answers	MCQ Score (100) (B)	
33.	732416105017	VIDHYA V	IV/EEE	27	90	19	76	83
34.	732416105301	AJITH M	IV/EEE	24	80	20	80	80
35.	732416105302	GUNASEKARAN S	IV/EEE	24	80	20	80	80
36.	732416105501	CHANDHRAKUMAR M	IV/EEE	30	100	20	80	90

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