KUMARAGURU college of technology
character is life

Register Number:…….

M.E DEGREE EXAMINATIONS: APRIL /MAY 2024

(Regulation 2018)

Second Semester

EMBEDDED SYSTEM TECHNOLOGIES

P18ESE2007: Industry 4.0

COURSE OUTCOMES

CO1: Familiarize the basics and advancements of Industry 4.0.

CO2: Understand the features of smart technologies using IoT.

CO3: Understand the concept of security used in Industry 4.0.

CO4: Apply the concepts of cloud computing in networked systems.

CO5: Study the various issues raised in Industry 4.0 environment.

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Sequence the evaluation of Various industrial revolution CO1 [K_2]

   1. Internet of things
   2. Computer and semiconductors
   3. Mass Production
   4. Steam and water power

   a) 2-3-4-1 b) 4-3-2-1

   c) 2-4-3-1 d) 2-3-1-4

2. The automation of communication between devices, with no human intervention. CO2 [K_2]

   a) Sensor b) Machine to Machine (M2M)

   c) Big Data d) Wearables

3. _____ is a Smart Factory. CO2 [K_2]

   a) Robots who will replace people b) Factories and logistic systems that will operate and organize themselves without human interaction

   c) Factories and logistic systems that will organise themselves by human interaction d) Machines connected with sensors

4. Matching type item with multiple choice code CO3 [K_2]

List I	List II
A. General applications connectivity	i. Smart Logistics
B. Industrial applications connectivity	ii. Smart Factories
C. Real-time monitoring, analysis, and control of manufacturing processes	iii. IIOT
D. Improve efficient transport and warehousing	iv. IoT

a) A-i B-iii C-ii D-iv b) A-ii B-iv C-i D-iii

c) A-iii B-i C-ii D-iv d) A-iv B-iii C-ii D-i

5. In the Digital Age (3rd Industrial Revolution) what two major inventions changed production and paved the way to Automation CO4 [K_2]

a) Model Control Systems b) Switches and Relays

c) Programmable Logic Controllers (PLC) and Robots d) Process Automation

6. Cloud computing services such as storage and software _____ CO4 [K_2]

a) Can be accessed on any device b) Are always free

c) Can be accessed by any device that is connected to a LAN d) Can be accessed on any device that is connected to the internet

7. Assertion(A): Cyber Physical system (CPS) is a new generation of digital systems CO3 [K_2]
Reason(R): It's designed to act like a network of multiple variables with both physical input and output – rather than standalone technology.

a) Both A and R are True, and R is the explanation of A b) Both A and R are True, and R is not the explanation of A

c) A is True and R is False d) A is False and R is True

8. _____ is the main issue in Industry 4.0. CO5 [K_2]

a) Unskilled Labor b) Cost

c) Time d) Internet connectivity

9. Which of the following statements is true? CO1 [K_2]

1. IoT is a subset of IIoT
2. IIoT is a subset of IoT
3. All the devices in IoT are connected to the internet
4. All IIoT devices are connected to the internet

a) 2,3,4 b) 1,2,3

c) 1,3,4 d) 1,2,3,4

10. With the growth of automation, robots and computers will replace _____ CO5 [K_2]

a) workers across a vast b) Products

c) Automobile d) Sensors and actuators

PART B (10 x 2 = 20 Marks)

11. Compare Drivers and Enablers. CO1 [K_2]
12. What are the compelling forces of industry 4.0? CO1 [K_2]
13. Define Predictive Analytics. CO2 [K_2]
14. Infer the benefits of smart Logistics. CO2 [K_2]
15. Define Mobile computing. CO3 [K_2]
16. List any two robotic applications implemented in industries. CO3 [K_2]
17. Relate the importance of Cloud computing in industries. CO4 [K_2]
18. Summarize the applications of cloud computing. CO4 [K_2]
19. What are the common opportunities and challenges of the fourth industrial revolution? CO5 [K_2]
20. How did the economy change during the Industrial Revolution? CO5 [K_2]

PART C (6 x 5 = 30 Marks)

21. Infer the challenges in Industry4.0 CO1 [K_2]

22. Compare IoT and IIoT. CO2 [K_4]

23. Interpret the types of cyber-Security. CO3 [K_2]

24. Illustrate how cloud computing is related with industry 4.0. CO4 [K_2]

25. Explain Future of Works and Skills for Workers in the Industry 4.0 Era. CO5 [K_2]

26. Illustrate the impact of Digitalization and Networked Economy. CO1 [K_2]

Answer any FOUR Questions
PART D (4 x 10 = 40 Marks)

27.	Examine the industry 4.0 Journey so far: Developments in USA, Europe, China and other countries.	CO1	[K_4]
28.	Elaborate the impact of industry 4.0 in smart manufacturing units with necessary diagram.	CO2	[K_6]
29.	Outline cyber physical system with necessary example.	CO3	[K_2]
30.	Discuss Harnessing and sharing knowledge in an organization.	CO4	[K_2]
31.	Explain Industry 4.0 laboratories with their merits and demerits.	CO5	[K_2]

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