Hall Ticket Number:

Code No. : 16549 H

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD
Accredited by NAAC with A+·+ Grade
B.E. (Honours) VI-Semester Main Examinations, May/June-2023
Industry 4.O
(Mech. Engg.)

Time: **3 hours**

Max. Marks: **60**

Note: Answer all questions from **Part-A** and any **FIVE** from **Part-B**

Part-A (10 × 2 = 20 Marks)

Q. No.	Stem of the question	M	L	CO	PO
1.	What are the main characteristics of Industry 4.O?	2	2	1	1
2.	List the different elements of industry 4.O.	2	1	1	1
3.	List the different elements of the smart factories.	2	1	2	1
4.	What is CPPS?	2	1	2	1
5.	List the different technical challenges in digital twins.	2	1	3	1
6.	What is digital thread?	2	1	3	1
7.	List the possible causes of accidents in the industry.	2	1	4	1
8.	Brief about Depth-Camara based collision detection and avoidance.	2	2	4	1
9.	What is an intelligent work piece?	2	2	5	1
10.	What is QR code?	2	1	5	1

Part-B (5 × 8 = 40 Marks)

Q. No.	Stem of the question	M	L	CO	PO
11. a)	What is the value chain system? How it is beneficial to the business.	4	2	1	3
b)	Differentiate the M2M and IIoT architectures.	4	2	1	3
12. a)	Explain Cyber Physical Systems.	4	2	2	3
b)	Explain the functional domains of Industrial Internet Systems (IIS).	4	3	2	3
13. a)	What are digital twins? Explain.	4	1	3	3
b)	Explain Ambient Assisted Working.	4	3	3	3
14. a)	Explain the different types of Human Robot Collaborations.	4	3	4	3
b)	List the different characteristics of the HRC.	4	1	4	3
15. a)	Explain the different cloud scenarios.	4	3	5	3
b)	Explain different types of work piece tagging.	4	3	5	3
16. a)	Explain the three-tier topology of the IIoT.	4	3	1	3
b)	Explain big data and Analytics	4	3	2	3
17.	Answer any **two** of the following:				
a)	List the different applications of the digital twins.	4	1	3	3
b)	Brief about a case study on Human Robot Collaborations.	4	3	4	3
c)	Applications of the smart workpiece.	4	3	5	3

M : Marks;   L: Bloom's Taxonomy Level;   CO; Course Outcome;   PO: Programme Outcome

i)	Blooms Taxonomy Level – 1	22.5%
ii)	Blooms Taxonomy Level – 2	31.25%
iii)	Blooms Taxonomy Level – 3 & 4	46.25%

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