

S.No. : 256

NAI 4302

No. of Printed Pages : 03

Following Paper ID and Roll No. to be filled in your Answer Book.

PAPER ID : 43901

Roll
No.

1	2	3	4	5	6	7	8	9	0
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B. Tech. Examination, 2024-25

(Odd Semester)

ARTIFICIAL INTELLIGENCE IN MECHANICAL ENGINEERING SYSTEMS

Time : Three Hours]

[Maximum Marks : 60

Note :- Attempt all questions.

SECTION-A

1. Attempt all parts of the following : $8 \times 1 = 8$

- (a) What is an end effector?
- (b) Define machine learning.
- (c) What is actuator?
- (d) What is fixed routing?
- (e) Define automation.

[P. T. O.]

- (f) What is CAPP?
- (g) Define AI in banking sector.
- (h) Define tachometer.

SECTION – B

2. Attempt any two parts of the following : $2 \times 6 = 12$
- (a) Explain the five levels of automation and control in manufacturing.
 - (b) What is the role of artificial intelligence in thermal powerplants? Explain in detail.
 - (c) Describe knowledge acquisition and how it is useful in artificial intelligence system.
 - (d) Explain the types of joints with diagrams.

SECTION – C

Note :- Attempt all questions. Attempt any two parts from each questions. $8 \times 5 = 40$

3. (a) Explain error detection and recovery and types of error recovery.
- (b) Define analog-digital converters.

- (c) What is an expert system?
- 4. (a) Explain the working of articulated robot and SCARA with diagram.
 - (b) Define MRP and explain how it works?
 - (c) How does adaptive control work?
- 5. (a) Define actuators according to the type of drive power.
 - (b) Differentiate between machine learning and data mining.
 - (c) Discuss the role of AI in manufacturing sector.
- 6. (a) Define the following :
 - (i) Tactile sensors
 - (ii) Proximity sensors
 - (iii) Optical sensors
- (b) Define the architecture of expert system.
- (c) Define additive manufacturing and how does 3D