Paper / Subject Code: 89424 / Automation and Artifical Intelligence

[Time: 3 hours]

[Total Marks: 80]

(06)

- NB: 1) Question No. 1 is compulsory
 - 2) Attempt any three questions out of the remaining five questions.
 - 3) The figures to the right indicate full marks.
 - 4) Assume suitable data wherever required but justify the same.

Q1. Attempt any four

- A. Justify the use of Pneumatics and Hydraulics with suitable examples.
- **B.** List four levels of automation with suitable examples.
- C. Explain the components of a Robotic system with a neat sketch.
- **D.** Explain the Architecture of PLC with a neat block diagram
- E. State the meaning of an intelligent system and explain the components of an intelligent system

Q2 A. Design an electro-pneumatic circuit for two-cylinder operation with the following sequence using 5/2 both side solenoid operated valve as DCV. A+B+Delay A-B-

- With user selection option single cycle Multicycle operation.
- **B.** Differentiate between hydraulic meter-in and meter-out circuits with suitable (10) applications.
- A. State the types of intelligent agents. Explain the goal-based agent along with a (10) neat sketch.
 - **B.** Illustrate with neat sketches the mechanical and vacuum type of end effectors (10) used in robotic systems, stating their advantages and disadvantages.
- A. Compare Supervised, Unsupervised, and reinforcement learning with different (10) parameters.
 - **B.** Design a hydraulic circuit for two-cylinder operation with the following sequence (10) using 4/2 pilot-operated valve as DCV using cascade method, A+ , B+ , Delay B-
- Q5 A. State the use of a decision tree. Explain the terminology of the decision tree with a suitable example.
 B. Write note on different actuation methods for Direction control valves (08)
 C. State the steps of the K-mean algorithm for clustering analysis (04)
 - A. What is the activation function? Explain the log-sigmoid activation function (08) with a neat sketch.
 - **B.** List any five applications of Natural Language Processing (NLP).
 - What is the activation function? Explain the log-sigmoid activation function (06) with a neat sketch

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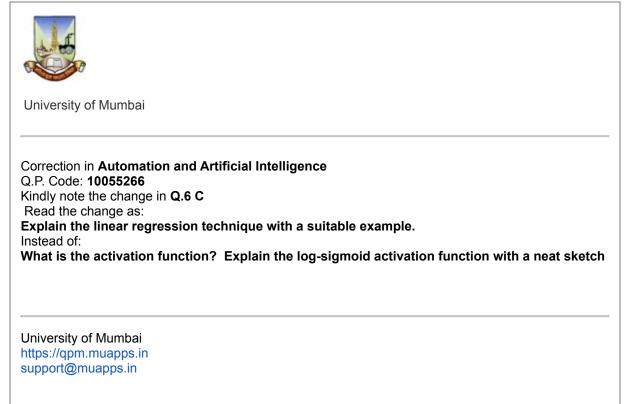


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Correction in Automation and Artificial Intelligence

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