

Roll No.

Total No. of Questions : 09]

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Paper ID [MC002]

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MCA (Sem. - 4th)

ROBOTICS ENGINEERING (MCA - 405B) (N2) (Elective - I)

Time : 03 Hours

Maximum Marks : 60

Instruction to Candidates:

1. Attempt any one question from each Sections A, B, C & D.
2. Section - E is compulsory.

Section - A

(1 x 10 = 10)

Q1) Explain the anatomy of a robotic manipulator in detail?

- Q2) (a) What are the reasons for the successful application of robots in manufacturing industries?
(b) Describe briefly the various types of motion controls possible in robots.

Section - B

(1 x 10 = 10)

Q3) Establish the Denavit Hartenberg link coordinate system for a PUMA robot?

Q4) What are touch sensors? Describe its different types along with their advantages and disadvantages.

Section - C

(1 x 10 = 10)

Q5) Describe in brief the frequency domain methods used for preprocessing image data in robotic system?

Q6) What is thresholding? How it is related with segmentation? Discuss in brief the various methods for image segmentation?

Section - D

(1 x 10 = 10)

Q7) What are the features of robot task level programming languages? Discuss in detail.

Q8) Name the various phases of robot task planning? Explain in detail the modeling phase.

Section - E

(10 x 2 = 20)

Q9)

- a) Define end effector of a robotic manipulator?
- b) Name the different coordinate systems?
- c) What is image processing?
- d) Name the two robot languages?
- e) What is full name of 'VAL' a robot language?
- f) Define Inverse Kinematics?
- g) Define 'Jacobian'?
- h) What do you understand by servomotors?
- i) Define 'wrist yaw'?
- j) What is low and high level vision?

