Dr. Ambedkar Institute of Technology, Bangalore-56

(An Autonomous Institution Affiliated to Visvesvarya Technological University, Belgaum)

Sub. Title : **ROBOTICS 18ME752**

Assignment 1 :unit 1 and unit 2

1. Explain the advantages and dis advantages of using robots in industries
2. Explain with a sketch hydraulic system of robot
3. Discuss the five common robot configurations with sketch
4. Explain the selection consideration of gripper
5. Explain actuators and discuss about hydraulic actuators with a neat sketch
6. Explain actuators and discuss about pneumatic actuators with a neat sketch
7. Explain electric drives with a neat sketch
8. Discuss the impact of robotics on direct labor
9. Explain performance parameters and with a figure describe repeatability resolution and accuracy
10. Describe the construction of stepper motor
11. Discuss force analysis of gripper mechanism in detail
12. Expain gripper design consideration
13. Problems page 54-63 from ganesh hedge text book
14. Short notes on
    robot links
    Joints in robots
    Need for robots
    Wrists & motions
    Management & robotics

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Assignment 2 :unit 3 and unit 4

Unit 3

1. With a block diagram write the classification of sensors and their functions
2. Explain touch sensors
3. Explain binary sensors with a sketch
4. Explain tactile sensors with a neat sketch
5. Explain proximity sensors with a neat sketch
6. Explain hall effect sensors with a neat sketch
7. Explain ultrasonic proximity sensors with a neat sketch
8. Explain optical sensors with a neat sketch
9. Dicuss about range sensors with triangulation method
10. Explain force and torque sensors with a neat sketch

Unit 4

11. With a block diagram explain vision system
12. What do u understand by the term robot vision explain its principal functions And functional description in detail
13. Define the construction features of vidicon camera and explain the working principle of it in detail
14. Explain in detail analog to digital conversion
15. What is image storage explain image processing and analysis in detail
16. Explain segmentation in detail
17. Explain object recognition from vision point of robotics
18. Explain with block diagram components of digital image processing
19. Short notes on
    Lighting technique and devices
    Illumination techniques
    encoding

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Assignment 3 :unit 5

Unit 5

1. expain with the block diagram hierarchial structure of computers in the factory of future
2. explain flexible manufacturing systems and its advantages
3. what is transfer systems explain rpller conveyor system and belt conveyor system in detail
4. explain head –changing FMS in detail
5. how does varaiable –mission manufacturing system works ?explain in detail
6. What is CAD/CAM systems write a layout of complete CAD/CAM systems
7. Explain the Japanese unmanned factory concept in detail
8. Explain the future of the factory concept
9. write short notes
   FMSs in japan
   FANUCs fuji complex
   The yamazaki FMS
   Okumas FMS